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Tigard-Tualatin School District Enrollment Forecast Update, 2013-14 to 2022-23

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TIGARD-TUALATIN SCHOOL DISTRICT

ENROLLMENT FORECAST UPDATE

2013-14 TO 2022-23

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Prepared By

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EXECUTIVE SUMMARY

This report presents the results of a demographic study conducted by the Portland State University Population Research Center (PRC). The study includes analysis of population, housing and enrollment trends affecting the District in recent years, estimates of the impacts of housing development on TTSD enrollment, and forecasts of district-wide and individual school enrollments for the 2013-14 to 2022-23 school years.

Enrollment Trends

The Tigard-Tualatin School District (TTSD) enrolled 12,341 students in Fall 2012, a decrease of 25 students (0.2 percent) from Fall 2011. This is the fourth consecutive year of K-12 enrollment loss, but the declines of the most recent two years have been small compared with the loss of 128 students in 2009-10 and 74 students in 2010-11. District elementary schools experienced a net loss of 36 students (0.6 percent) in 2012-13, and 238 students (4.1 percent) for the four year period since their enrollment peak in 2008-09. Middle grades (6^{th}-8^{th}) in District schools gained enrollment in 2012-13, and are just 59 students (2.0 percent) below their 2009-10 peak. District-wide enrollment in high school grades 9-12 has been virtually unchanged since 2010-11 and remains near its peak.

In contrast to the K-5^{th} grade enrollment decline, Fall 2012 kindergarten enrollment of 939 in TTSD schools was the largest ever, 62 students larger than in Fall 2011. However, the kindergarten growth is not likely to be sustained, as births to District residents peaked in 2006-07, the birth cohort that entered kindergarten in Fall 2012.

Current Residential Development

Fewer new homes were built in the three years from 2008 to 2010 than in any single year between 2000 and 2006. However, a recovery began in 2011. Development resumed in the large Edgewater subdivision in King City (Deer Creek ES/Twality MS/Tualatin HS), and in the first 10 months of 2012 the City of Tigard has issued more permits for single family homes than in any year since 2007. The Alberta Rider and Metzger elementary areas account for the largest number of Tigard's new homes in the 2011 and 2012 period. In the City of Durham site work

began in September 2012 for the first phase of the 367 unit Bridgeport Apartments (Durham ES/Twality MS/Tualatin HS).

Potential Residential Development

On November 29, 2012, the Metro Council adopted the distribution of their regional household and employment growth forecast to Traffic Analysis Zones (TAZs). We approximated the TTSD boundary using TAZs, allocating Metro's forecast to the District. This allocation shows growth of more than 7,000 households between the 2010 base year and the 2025 forecast increment, an average annual growth rate of 1.3 percent, which is consistent with our population forecast.

In the December 2010 enrollment forecast report for TTSD we included an analysis of potential residential development in the West Bull Mountain area. Using planned densities and land uses from Washington County's West Bull Mountain Concept Plan (WBMCP), we estimated that the TTSD portion of the concept plan area could include from 2,391 to 3,295 homes at build out, generating 736 to 1,017 TTSD K-12 students. Since those estimates were prepared, the City of Tigard has annexed 200 acres of the plan area, now known as River Terrace, and has initiated an 18 to 24 month process to prepare a community plan for part of the area that was included in the WBMCP.

Enrollment Forecast

Slow growth in K-12 enrollment is forecast between 2012-13 and 2016-17, with annual growth rates ranging between 0.3 and 0.6 percent. Although growth is expected due to migration, the decline in birth rates between 2007 and 2011 will result in smaller kindergarten classes through at least 2016-17. After 2016, more enrollment growth is forecast due to expected housing growth including infill in the District's more established areas such as Metzger, Central Tigard, and the Tigard Triangle, and planned development in the River Terrace area. Annual enrollment growth rates range from 0.8 percent to 1.0 percent after 2016-17. Over the 10 year forecast period, K-12 enrollment is forecast to increase by 921 students (seven percent).

Although incoming kindergarten classes are forecast to be smaller than the current class, K-5 enrollments grow in the near term due to in-migration. However, secondary enrollments are likely to grow very little or not at all, as current relatively small 2nd to 5th grade classes advance

into middle school. In the first five years of the forecast, between 2012-13 and 2017-18, K-5th grades add 229 students (four percent), 6th-8th grades add 42 students (one percent) and 9th-12th grades add 97 students. For the 10 year period ending in 2022-23, K-5th grade enrollments grow by 538 students (10 percent). Middle school enrollments fluctuate somewhat; in the seven years between 2012-13 and 2019-20, 6th-8th grades add 217 students, but their enrollment falls in 2021-22 and 2022-23 due to the smaller birth cohorts of the 2008 to 2011 period. High school enrollment growth of 288 students is forecast for the 10 year period.

Table 1 compares the historic and forecast growth for the District by five year increment. More detailed forecasts for the District may be found in Table 16 on page 34 of this report.

Table 1
Historic and Forecast Enrollment
Tigard-Tualatin School District

	Actual			Forecast	
	2002-03	**2007-08**	**2012-13**	**2017-18**	**2022-23**
District Total	**11,913**	**12,460**	**12,341**	**12,709**	**13,262**
5 year change		***547***	***-119***	***368***	***553***
		5%	***-1%***	***3%***	***4%***
K-5	5,380	5,672	5,533	5,762	6,071
5 year change		*292*	*-139*	*229*	*309*
		5%	*-2%*	*4%*	*5%*
6-8	2,834	2,855	2,863	2,905	2,958
5 year change		*21*	*8*	*42*	*53*
		1%	*0%*	*1%*	*2%*
9-12	3,699	3,933	3,945	4,042	4,233
5 year change		*234*	*12*	*97*	*191*
		6%	*0%*	*2%*	*5%*

Population Research Center, PSU. December 2012.

Individual School Forecasts

We evaluated Metro's residential capacity data for each school attendance area. Among elementary schools, Alberta Rider's attendance area contains the greatest amount of buildable residential land, followed by Durham, Metzger, Woodward, and Deer Creek. These five schools account for about 90 percent of the vacant residential land in the District. Alberta Rider and Woodward also include the TTSD portion of the West Bull Mountain area. Assumptions about

future changes in kindergarten enrollment and future net migration are based on past trends for each school as well as future residential growth potential.

Enrollment at Fowler Middle School remains relatively stable throughout the 10 year period, with the possibility of a growth spurt when the current large kindergarten class reaches 6th grade in 2018-19. Hazelbrook's largest growth occurs next Fall (2013-14) when its current small 8th grade is replaced by a larger incoming 6th grade. Twality is expected to lose enrollment next year, but it experiences the greatest growth among middle schools in the long run, with a 2020-21 enrollment 93 students larger than its 2012-13 total. Tigard High School's enrollment forecast is fairly stable, while Tualatin High School adds nearly 200 students over the 10 year forecast period.

Table 17 on page 36 of this report presents the enrollment forecasts for each school, grouped by school level (elementary, middle, and high). Individual school forecasts are also presented in Appendix A.

INTRODUCTION

For the seventh consecutive year, the Portland State University Population Research Center (PRC) has prepared enrollment forecasts for the Tigard-Tualatin School District (TTSD). This report updates TTSD enrollment history and local area population, housing, and economic trends, and presents new forecasts for a 10 year horizon from 2013-14 to 2022-23. Information sources include the U.S. Census Bureau, birth data from the Oregon Center for Health Statistics, city and county population estimates produced by PRC, housing development data from the cities and counties, and residential capacity data and forecasts from Metro.

The District serves the cities of Tigard, Tualatin, Durham and King City, and portions of unincorporated Washington County, notably the Metzger and Bull Mountain communities.[1] Most of the District is within Washington County; a portion in Clackamas County (to the east of SW 65th Ave. in the City of Tualatin) contains less than three percent of the District's total population.

Following this introduction are sections presenting recent population, housing, and enrollment trends within the District. Next are the results of the district-wide enrollment forecasts and individual school forecasts, and a description of the methodology used to produce them. The final section contains a brief discussion of the nature and accuracy of forecasts. An appendix contains a one page profile for each school showing its enrollment history, enrollment forecasts, and capacity.

[1] The northern edge of the City of Tigard is served by the Beaverton School District, and small portions of the City of Tualatin are served by the West Linn-Wilsonville and Sherwood School Districts.

POPULATION AND HOUSING TRENDS, 2000 to 2012

Between 2000 and 2010, total population within the TTSD grew by 16 percent, from 72,164 persons to 83,457. This growth rate was similar to the Portland metropolitan area's 15 percent growth in the decade. More than 97 percent of TTSD residents lived within the Washington County portion of the District (81,311 persons in 2010). Clackamas County accounted for the rest (2,146 persons in 2010). The District added 11,293 residents between 2000 and 2010. Its 16 percent rate of population growth during the 2000s was slightly less than the 19 percent growth experienced by Washington County overall, but greater than the 11 percent growth rate in Clackamas County.

By the late 2000s, growth began to slow throughout the Portland region and in the TTSD, as new housing construction declined precipitously. The slower growth has persisted through the first

Table 2

City and Region Population, 2000, 2010, and 2012

				Avg. Annual Growth Rate	
	2000	2010	2012	2000-2010	2010-2012
City of Durham	1,382	1,351	1,365	*-0.2%*	*0.5%*
City of King City[1]	1,949	3,111	3,225	*4.8%*	*1.6%*
City of Tigard[2]	41,223	48,035	48,695	*1.5%*	*0.6%*
City of Tualatin[3]	22,791	26,054	26,170	*1.3%*	*0.2%*
Tigard-Tualatin S.D.	72,164	83,457	N/A	*1.5%*	*N/A*
Clackamas County	338,391	375,992	381,685	*1.1%*	*0.7%*
Washington County	445,342	529,710	542,860	*1.8%*	*1.1%*
Portland-Vancouver-Beaverton MSA[4]	1,927,881	2,226,009	2,265,790	*1.4%*	*0.8%*

1. King City's population growth includes the annexation of 288 residents between 2000 and 2010.

2. Population of the entire city of Tigard. About 84.5% of the city's population is within the TTSD. Population growth includes the annexation of 1,205 residents between 1990 and 2000 and 1,119 residents between 2000 and 2010.

3. Population of the entire city of Tualatin. About 95% of the city's population is within the TTSD. Population growth includes the annexation of 101 residents between 1990 and 2000 and 53 residents between 2000 and 2010.

4. Portland-Vancouver-Beaverton MSA consists of Clackamas, Columbia, Multnomah, Washington, Yamhill (OR) and Clark and Skamania (WA) Counties.

Sources: U.S. Census Bureau, 2000 and 2010 censuses aggregated to TTSD boundary by PSU Population Research Center; Portland State University Population Research Center, Preliminary July 1, 2012 estimates; State of Washington Office of Financial Management April 1, 2012 estimates.

two years of the current decade. Table 2 includes PRC's 2012 estimates for the cities and counties served by TTSD, showing annual growth rates of 0.6 percent for the City of Tigard and 0.2 percent for the City of Tualatin.

Table 3 presents additional characteristics for TTSD compiled from the decennial censuses of 1990, 2000, and 2010. The figures are based on our aggregation of census block data to approximate the District boundaries. The boundaries used to compile the data are consistent with the tax assessors' parcel files and the District's maps. Data for TTSD published by the Census Bureau and the U.S. Department of Education show a smaller population and fewer households due to inaccurate boundaries used in the Census Bureau's geographic system. Efforts are now underway to improve the Census Bureau's school district boundary files.

Table 3
Tigard-Tualatin School District
Housing and Household Characteristics, 1990, 2000, and 2010

				10 year Change	
	1990	2000	2010	'90-'00	'00-'10
Housing Units	22,467	30,831	35,228	8,364	4,397
Households	21,317	29,097	33,454	7,780	4,357
Households with children < 18	7,097	10,090	11,153	2,993	1,063
share of total	*33%*	*35%*	*33%*		
Households with no children < 18	14,220	19,007	22,301	4,787	3,294
share of total	*67%*	*65%*	*67%*		
Household Population	51,391	71,714	82,949	20,323	11,235
Persons per Household	2.41	2.46	2.48	0.05	0.01

Source: U.S. Census Bureau, 1990, 2000, and 2010 Censuses; data aggregated to TTSD boundary by Portland State University Population Research Center.

Metro's Regional Land Information System (RLIS) combines information from county tax assessor records with spatial features, enabling the tax lot information to be organized by various geographic areas. In Table 4 recently built single family homes are tabulated by current (2012-13) attendance area and year built. Multiple family developments were assigned to current attendance areas and are tabulated in Table 5.

Table 4
Tigard-Tualatin School District
New Single Family Homes By Attendance Area

	Year Built											2000-10
Elementary Area*	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
Alberta Rider	89	87	49	85	25	149	138	58	36	14	36	766
Bridgeport	29	15	4	38	56	8	0	0	0	0	0	150
Byrom	35	55	56	23	18	33	71	22	25	4	18	360
C.F. Tigard	74	40	47	103	51	2	32	18	17	3	6	393
Deer Creek	46	94	68	70	40	118	146	53	14	16	17	682
Durham	71	73	6	1	29	116	5	37	5	16	12	371
Metzger	38	30	31	20	25	5	23	58	18	9	27	284
Templeton	18	39	34	5	44	19	11	46	8	7	4	235
Tualatin	19	150	122	67	59	89	26	10	1	1	1	545
Woodward	121	28	44	191	24	8	4	22	5	8	9	464
District	**540**	**611**	**461**	**603**	**371**	**547**	**456**	**324**	**129**	**78**	**130**	**4250**
Middle School Area*												
Fowler	233	98	122	314	100	15	59	98	40	20	42	1141
Hazelbrook	83	220	182	138	136	134	99	34	30	6	19	1081
Twality	224	293	157	151	135	398	298	192	59	52	69	2028
District	**540**	**611**	**461**	**603**	**371**	**547**	**456**	**324**	**129**	**78**	**130**	**4250**
High School Area*												
Tigard	321	218	171	346	177	150	71	181	52	42	66	1795
Tualatin	219	393	290	257	194	397	385	143	77	36	64	2455
District	**540**	**611**	**461**	**603**	**371**	**547**	**456**	**324**	**129**	**78**	**130**	**4250**

**Note: Current (2012-13) attendance area.*

Source: Metro Regional Land Information System, August 2012; tax lot information compiled by Metro from county tax assessors information includes year built and land use ("SFR"). Compiled by TTSD attendance area by Population Research Center, PSU.

Table 5
Tigard-Tualatin School District
New Multiple Family Units By Attendance Area

	Year Built											2000-10
Elementary Area*	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
Alberta Rider				4								4
Bridgeport	15											15
Byrom												0
C.F. Tigard												0
Deer Creek			264									264
Durham				42								42
Metzger			29			32	19	65		13		158
Templeton						108	55	51	33			247
Tualatin	240	10										250
Woodward												0
District	**255**	**10**	**293**	**46**	**0**	**140**	**74**	**116**	**33**	**13**	**0**	**980**
Middle School Area*												
Fowler			29			32	19	65		13		158
Hazelbrook	255	10	264									529
Twality				46		108	55	51	33			293
District	**255**	**10**	**293**	**46**	**0**	**140**	**74**	**116**	**33**	**13**	**0**	**980**
High School Area*												
Tigard			29	42		140	74	116	33	13		447
Tualatin	255	10	264	4								533
District	**255**	**10**	**293**	**46**	**0**	**140**	**74**	**116**	**33**	**13**	**0**	**980**

**Note: Current (2012-13) attendance area.*

Source: Multiple family development information compiled by TTSD, supplemented by information from various sources to determine year that each development was completed. Excludes senior housing. Compiled by TTSD attendance area by Population Research Center, PSU.

Tables 4 and 5 document the contrast in residential development between the early to mid 2000s and the late 2000s. Fewer new homes were built in the three years from 2008 to 2010 than in any single year between 2000 and 2006. However, recent building permit data in Table 6 show the recovery beginning in 2011. Development resumed in the large Edgewater subdivision in King City (Deer Creek ES/Twality MS/Tualatin HS), and in the first 10 months of 2012 the City of Tigard has issued more permits for single family homes than in any year since 2007. The Alberta Rider and Metzger elementary areas account for the largest number of new single family homes in the 2011 and 2012 period, and the 30 units of multi-family housing permitted by the City of Tigard in 2012 are also in the Metzger Elementary area. In Durham, permits have been issued for the first phase of the 367 unit Bridgeport Apartments (Durham ES/Twality MS/Tualatin HS), where site work began in September 2012.

Table 6

Housing Units Authorized by Building Permits, Cities within TTSD

	Durham		King City		Tigard[1]		Tualatin[2]	
Year Permit Issued	Single Family	Multiple Family	Single Family	Multiple Family	Single Family	Multiple Family	Single Family	Multiple Family
2000	2	0	0	0	403	0	64	17
2001	4	0	0	0	504	0	222	0
2002	1	0	0	0	340	0	184	264
2003	1	0	51	0	380	0	140	0
2004	1	0	14	0	276	108	174	0
2005	1	0	68	0	344	6	86	0
2006	3	0	113	0	262	20	101	0
2007	1	0	52	0	198	0	48	0
2008	1	0	12	0	52	0	21	0
2009	1	0	10	0	44	0	2	0
2010	2	0	12	0	98	50	22	0
2011	2	0	78	0	88	0	19	0
2012 (Jan - Oct)	1	213	91	0	124	30	14	0

1. This table shows permits for the entire city. Between 2008 and 2011, 79 percent of Tigard's permitted single family homes were within TTSD, based on GIS shape file (points) provided by City of Tigard Community Development Department.

2. This table shows permits for the entire city. Based on tax assessor data compiled in Metro's RLIS, no single family homes have been built since 2000 within the City of Tualatin outside of the TTSD.

Source: U.S. Census Bureau, Residential Construction Branch. Data available online at http://censtats.census.gov/bldg/bldgprmt.shtml.

HOUSING AND ENROLLMENT

How many children are expected to live in future new homes and attend TTSD schools? Because each development is unique, the number of resident public school students per home may depend on factors including affordability, proximity to schools, the number of bedrooms, and the presence or absence of child-friendly amenities within the development and in the surrounding neighborhood. However, district-wide average student generation rates may be useful as a baseline for estimating potential student generation from planned and proposed developments. Furthermore, measuring the number of students in older homes helps to explain the "aging in place" phenomenon that can lead to enrollment losses as families age.

Using data from Metro, we compiled a current housing inventory in a spatial file based on parcels that differentiates single family homes, apartments, condominiums, and manufactured home parks. We then combined this file with student address points from Fall 2012 in order to quantify the number of students by housing type.

For District homes built between 2000 and 2010, the average number of TTSD K-12 students per single family home was 0.56, or just over one student in every two homes. The rates are within the range of rates that we have measured for new single family homes in recent studies for other area school districts.[2] Homes built in the 1990s had a lower K-12 average of 0.47 students, and these homes, now 12 to 22 years old, are home to slightly older families — fewer elementary and more high school children. Homes built before 1990 have an average of just 0.34 TTSD K-12 students per home.

Table 7 includes these rates by age of single family home as well as rates for other types of homes. In the most recent decade, a growing number of lots in new subdivisions are designed for attached or nearly attached ("skinny") row homes. Several hundred of these homes on smaller lots had been built by 2010, generating fewer TTSD students per home (0.19) than detached homes built at about the same time (0.61). Among other types of housing, rental

[2] For example, Fall 2011 rates were 0.66 in the North Clackamas School District, 0.50 in the Oregon City School District, 0.51 in the Beaverton School District, and 0.47 in the Canby School District.

apartments had higher student generation rates (0.35) than condominium units (0.12) or manufactured homes (0.20).

Table 7
Average Number of TTSD Students per Home, Fall 2012
By Housing Type and Grade Level

	Grade Level			
	K-5	**6-8**	**9-12**	**K-12**
Single family homes built since 2000	0.28	0.13	0.15	**0.56**
detached homes built since 2000	0.31	0.14	0.16	**0.61**
row homes built since 2000	0.10	0.03	0.07	**0.19**
Single family homes built 1990-1999	0.18	0.11	0.18	**0.47**
Single family homes built before 1990	0.14	0.08	0.12	**0.34**
Condominiums	0.06	0.03	0.03	**0.12**
Apartments	0.18	0.08	0.09	**0.35**
Manufactured homes in M.H. Parks	0.09	0.06	0.05	**0.20**

Source: Data compiled by PSU-PRC, using TTSD student data and geographic shape files from Metro RLIS. Excludes senior housing developments.

These same Fall 2012 student generation rates are shown in Chart 1, illustrating the "aging in place" that occurs in single family homes. On average, the homes that are 12-22 years old have fewer young children than homes that are less than 12 years old. As the older children graduate from high school, the homes built in the 1990s will soon have even fewer K-12 residents, much like the homes built before 1990 that are now more than 22 years old. Although younger families may eventually occupy the older homes, owner-occupied homes turn over to new owners very gradually, and the new owners will represent a diverse mix of households that may not include as many families with children as the newer tract homes.

Table 8 shows how the declining number of students in older homes has outweighed the student growth in newer homes and apartments during recent years in which few new homes have been built. Without the new housing that drove enrollment growth in the 1990s and early 2000s, the District has lost enrollment due to the aging of families living in homes built before 2000.

Chart 1

TTSD Students per Single Family Home, Fall 2012

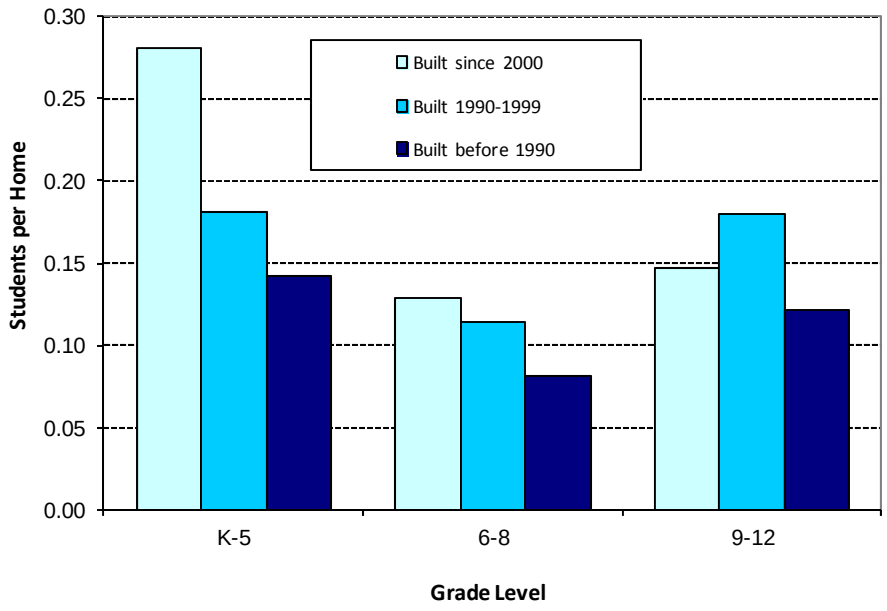


Table 8

Number of TTSD Students, Fall 2007 to Fall 2012

By Housing Type

	TTSD K-12 Students						
Housing Type	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**Change '07-'08 to '12-'13**
Single Family, Total	8,761	8,786	8,658	8,350	8,243	8,116	-645
built before 1990	4,218	4,160	3,969	3,788	3,671	3,546	-672
built 1990 to 1999	2,729	2,701	2,601	2,456	2,339	2,254	-475
built 2000 to 2005	1,637	1,658	1,738	1,701	1,759	1,791	154
built since 2006	177	267	350	405	474	525	348
Multi-Family, Total	3,306	3,386	3,423	3,653	3,662	3,753	447
apts. and plexes	3,142	3,205	3,246	3,457	3,476	3,561	419
condominiums	164	181	177	196	186	192	28
Manuf. Home Parks	189	183	190	186	189	202	13
All Other*	204	240	196	204	272	270	66
District total	**12,460**	**12,595**	**12,467**	**12,393**	**12,366**	**12,341**	**-119**

**Note: Includes addresses that are non-residential, outside of the District, or not able to be geocoded.*

Sources: TTSD students by address, Metro Regional Land Information System (August 2012) taxlots, Metro Multi-Family Housing Inventory. Estimates by Population Research Center, PSU.

ENROLLMENT TRENDS

The Tigard-Tualatin School District (TTSD) enrolled 12,341 students in Fall 2012, a decrease of 25 students (0.2 percent) from Fall 2011. This is the fourth consecutive year of K-12 enrollment loss, but the declines of the most recent two years have been small compared with the loss of 128 students in 2009-10 and 74 students in 2010-11. District elementary schools experienced a net loss of 36 students (0.6 percent) in 2012-13, and 238 students (4.1 percent) for the four year period since their enrollment peak in 2008-09. Middle grades (6^{th}-8^{th}) in District schools gained enrollment in 2012-13, and are just 59 students (2.0 percent) below their 2009-10 peak. District-wide enrollment in high school grades 9-12 has been virtually unchanged since 2010-11 and remains near its peak.

In contrast to the K-5^{th} grade enrollment decline, Fall 2012 kindergarten enrollment of 939 in TTSD schools was the largest ever, 62 students larger than in Fall 2011. However, the kindergarten growth is not likely to be sustained, as births to District residents peaked in 2006-07, the birth cohort that entered kindergarten in Fall 2012.

Prior to 2009-10, total K-12 enrollment in the TTSD grew in 20 out of 21 years. New housing development contributed to enrollment growth throughout that period. Sustained growth in elementary enrollment from the late 1980s to the mid 1990s and the growth in high school enrollment in the 2000s were influenced by the rapid increase in births caused by the "echo" of the baby boom. A growing Latino population was also a major contributor to the District's enrollment gains, but Latino enrollment has also experienced decline at the elementary level in each of the past two years.

Table 9 summarizes the enrollment history for the District by grade level annually for the past 10 years, from 2002-03 to 2012-13. As shown in the table, during the five year period between 2003-04 and 2008-09 the District added between 123 and 200 students and experienced growth rates of 1.0 to 1.7 percent each year. For the entire ten year period, K-12 enrollment is up by 428 students, or four percent.

Table 9

Tigard-Tualatin School District, Enrollment History, 2002-03 to 2012-13

Grade	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
K	831	779	807	893	906	860	924	886	902	877	939
1	909	906	921	900	990	984	919	971	896	942	935
2	937	912	887	944	905	1,017	1,010	927	949	885	917
3	878	926	920	897	964	903	1,009	1,007	909	935	888
4	906	877	913	940	931	963	919	970	1,001	919	928
5	919	899	914	900	975	945	990	922	985	1,011	926
6	1,008	924	926	913	910	965	974	966	904	967	975
7	912	990	945	950	929	937	981	969	958	910	960
8	914	915	1,003	969	957	953	936	987	937	973	928
9	991	952	971	1,066	992	1,015	976	944	1,028	1,006	1,011
10	923	977	951	952	1,033	1,015	1,006	977	951	1,014	986
11	963	891	942	932	910	1,007	973	968	978	937	990
12	822	844	890	874	898	890	976	968	993	988	958
US*	0	18	20	3	7	6	2	5	2	2	0
Total	**11,913**	**11,810**	**12,010**	**12,133**	**12,307**	**12,460**	**12,595**	**12,467**	**12,393**	**12,366**	**12,341**
Annual change		*-103*	*200*	*123*	*174*	*153*	*135*	*-128*	*-74*	*-27*	*-25*
		-0.9%	*1.7%*	*1.0%*	*1.4%*	*1.2%*	*1.1%*	*-1.0%*	*-0.6%*	*-0.2%*	*-0.2%*
K-5	5,380	5,299	5,362	5,474	5,671	5,672	5,771	5,683	5,646	5,569	5,533
6-8	2,834	2,829	2,874	2,832	2,796	2,855	2,891	2,922	2,799	2,850	2,863
9-12	3,699	3,682	3,774	3,827	3,840	3,933	3,933	3,862	3,948	3,947	3,945

	5 Year Change: 2002-03 to 2007-08		5 Year Change: 2007-08 to 2012-13		10 Year Change: 2002-03 to 2012-13	
	Change	**Pct.**	**Change**	**Pct.**	**Change**	**Pct.**
K-5	292	*5%*	-139	*-2%*	153	*3%*
6-8	21	*1%*	8	*0%*	29	*1%*
9-12	234	*6%*	12	*0%*	246	*7%*
Total	**547**	***5%***	**-119**	***-1%***	**428**	***4%***

**Note: "US" are ungraded secondary students, included in grade 9-12 totals.*

Sources: Oregon Department of Education; TTSD

Private and Home School Enrollment and District "Capture Rate"

Generally, the best source for private school enrollment by residence is census data. The 2000 Census and the more recent American Community Survey (ACS) included questions about school enrollment by level and by type (public or private). In 2000, 10 percent of K-12 students living in the District were enrolled in private schools. The ACS estimate from surveys conducted from 2009 to 2011 indicates that only three percent of TTSD K-12 students are enrolled in private schools. However, the ACS has a smaller sample size than the census long form, with larger margins of error. A three percent private school share is unlikely.

Another difference between TTSD enrollment and child population can be attributed to home schooling. Home schooled students living in the District are required to register with the Northwest Regional Educational Service District (NWRESD), though the statistics kept by the NRESD are not precise because students who move out of the area are not required to drop their registration. Students who enroll in public schools after being registered as home schooled are dropped from the home school registry. In 2011-12 there were 292 TTSD residents registered as home schooled.[3] This accounts for about two percent of total TTSD K-12 residents. The number of home-schooled students has remained in the range between 200 and 300 each year since 2000.

For purposes of forecasting enrollment, the ratios of kindergarten and first grade public school enrollment to overall population in the corresponding ages are very important. These ratios are called "capture rates." Once a student is enrolled in the public schools in first grade, it is very likely that they will continue to be enrolled in subsequent grades, unless their family moves out of the District. Comparing TTSD kindergarten and 1st grade enrollment in 1999-00 and 2000-01 to the 2000 Census and in 2009-10 and 2010-11 to the 2010 Census reveals little or no change in the District's "capture rates." In both periods, TTSD enrollment accounted for about 78 to 79 percent of the kindergarten-age population and 84 percent of the 1st grade age population. That means that about 22 percent of kindergarten-age children and 16 percent of first grade age children were not enrolled in TTSD schools. These children include students who were enrolled in private schools or charter schools, net transfers to and from other public school districts,

[3] Northwest Regional Education Service District, *2011-12 Annual Report*.

home schooled students, or children not yet attending school, since school is not compulsory until age seven.

MITCH Charter School

The District charter school MITCH is not included in the enrollment history or forecasts in this report. The school opened in 2003-04, and in 2009-10 it enrolled 147 students in grades K-5. In 2010-11, MITCH added a class of first grade students, expanded to include grades K-8, and enrolled 247 students. Its enrollment has been stable the past two years. Its impact on enrollment at district-run schools has grown due to the 2010-11 expansion and the gradual increase in the share of its students who are residents of TTSD. The TTSD resident share of MITCH enrollment has grown from about 60 percent in Fall 2006 to 90 percent in Fall 2012, as the number of TTSD residents enrolled at MITCH more than doubled from about 100 in Fall 2006 to about 220 in Fall 2010.

More detailed analysis of MITCH's enrollment by grade level was included in the enrollment forecast report published in December 2010. Because MITCH is operating close to its capacity and charter agreement of 250 students, no additional significant impacts on enrollments at other TTSD schools are expected in the near future.

Hispanic Enrollment Growth

Between 2011-12 and 2012-13, the District's Hispanic enrollment grew by 40 students (1.4 percent). This represents the smallest K-12 Hispanic enrollment growth total in more than 20 years. Furthermore, elementary schools had a net loss of 17 Hispanic students (1.2 percent). The largest percentage growth was in the high school grades 9-12, which added 40 Hispanic Students (4.5 percent). Over the past five years, Hispanic enrollment has increased by 556 students (24 percent), while the number of non-Hispanic students has decreased by 675 students (seven percent).

Growth in the school age Hispanic population has been attributable to in-migration of young adults and higher fertility rates. The slower growth, or decline, in the non-Hispanic school age population is related to the age distribution of the native U.S. born population, which is still impacted by the large baby boom generation. In the TTSD and in most communities there are

currently more white non-Hispanics in their 40s and 50s than in their 20s and 30s, so their high school or college age children outnumber elementary-age children. Each year, more white non-Hispanics graduate from high school than enter kindergarten or first grade due to the age distribution of families and their children.

Hispanic enrollment is now 24 percent of the District K-12 total and 26 percent of the K-5 (elementary) total. Table 10 reports annual Hispanic enrollment by school level from 2007-08 to 2012-13.

Enrollment at Individual Schools

Three of TTSD's 10 elementary schools experienced enrollment growth between 2011-12 and 2012-13. Alberta Rider added 27 students, and Templeton and Tualatin added 17 and 22 students, respectively. Three other elementary schools, C.F. Tigard, Durham, and Metzger, had small enrollment losses of three to five students. There were greater enrollment losses of 36 at Bridgeport, 21 at Byrom, 17 at Woodward, and 13 at Deer Creek. For Woodward it was the fourth consecutive year of losses, totaling 104 students since 2008-09.

Among the District's three middle schools, a loss of 25 students at Fowler between 2011-12 and 2012-13 was nearly offset by gains of 11 students at Hazelbrook and nine at Twality.

Tigard High School experienced a net loss of 40 students between 2011-12 and 2012-13, while Tualatin High School lost 32 students. Both schools enroll slightly fewer students than they did five years ago. Compared to 2007-08, enrollment is down by 27 students at Tigard High, and 21 students at Tualatin High.

The new Tigard-Tualatin Online Academy had 85 students in October 2012, including 68 students in 9^{th}-12^{th} grade. When these students and Durham Center students are added to the students at the two traditional high schools, the total enrollment at district-run high schools is nearly identical to both one year ago (2011-12) and five years ago (2007-08).

Total enrollment at each of the District's schools and recent enrollment trends by school are shown in Table 11.

Table 10
Hispanic Enrollment History, Tigard-Tualatin School District

School	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Change 2007-08 to 2012-13 Number	Change 2007-08 to 2012-13 Percent
Hispanic K-5	**1,265**	**1,291**	**1,398**	**1,486**	**1,439**	**1,422**	**157**	**12%**
Change		26	107	88	-47	-17		
Share of District Total	*22%*	*22%*	*25%*	*26%*	*26%*	*26%*		
Hispanic 6-8	**514**	**582**	**624**	**638**	**673**	**696**	**182**	**35%**
Change		68	42	14	35	23		
Share of District Total	*18%*	*20%*	*21%*	*23%*	*24%*	*24%*		
Hispanic 9-12	**579**	**600**	**629**	**705**	**762**	**796**	**217**	**37%**
Change		21	29	76	57	34		
Share of District Total	*15%*	*15%*	*16%*	*18%*	*19%*	*20%*		
Hispanic Total	**2,358**	**2,473**	**2,651**	**2,829**	**2,874**	**2,914**	**556**	**24%**
Change		115	178	178	45	40		
Share of District Total	*19%*	*20%*	*21%*	*23%*	*23%*	*24%*		
Non-Hispanic Total	**10,102**	**10,122**	**9,816**	**9,564**	**9,492**	**9,427**	**-675**	**-7%**
District Total	**12,460**	**12,595**	**12,467**	**12,393**	**12,366**	**12,341**	**-119**	**-1%**

Source: Tigard-Tualatin School District

Table 11
Enrollment History for Individual Schools, 2007-08 to 2012-13

	Historic Enrollment						5 year change 2007-08 to 2012-13	
School	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**Number**	**Percent**
Alberta Rider	540	571	582	579	574	601	61	*11.3%*
Bridgeport	534	550	529	549	547	508	-26	*-4.9%*
Byrom	659	654	633	624	589	568	-91	*-13.8%*
C.F. Tigard	598	587	577	547	587	583	-15	*-2.5%*
Deer Creek	609	581	574	556	529	516	-93	*-15.3%*
Durham*	512	542	556	548	553	550	38	*7.4%*
Metzger*	589	590	582	574	575	570	-19	*-3.2%*
Templeton	551	588	588	614	579	596	45	*8.2%*
Tualatin	560	580	562	584	595	617	57	*10.2%*
Woodward	520	528	500	467	441	424	-96	*-18.5%*
Elementary Totals	**5,672**	**5,771**	**5,683**	**5,642**	**5,569**	**5,533**	**-139**	***-2.5%***
Fowler M.S.*	898	876	885	823	827	802	-96	*-10.7%*
Hazelbrook M.S.	1,002	983	1,013	959	977	988	-14	*-1.4%*
Twality M.S.*	951	1,028	1,020	1,012	1,040	1,049	98	*10.3%*
Middle School Totals	**2,851**	**2,887**	**2,918**	**2,794**	**2,844**	**2,839**	**-12**	***-0.4%***
Tigard H.S.	2,002	2,003	1,977	2,046	2,015	1,975	-27	*-1.3%*
Tualatin H.S.	1,863	1,864	1,825	1,854	1,874	1,842	-21	*-1.1%*
High School Totals	**3,865**	**3,867**	**3,802**	**3,900**	**3,889**	**3,817**	**-48**	***-1.2%***
Durham Center	72	70	64	57	64	67	-5	*-6.9%*
Tigard-Tualatin Online Academy	--	--	--	--	--	85	85	*N/A*
District Totals	**12,460**	**12,595**	**12,467**	**12,393**	**12,366**	**12,341**	**-119**	***-1.0%***

**Note: Boundary changes were phased in beginning in 2006-07 that shifted a portion of the former Metzger attendance area to Durham and a portion of the former Fowler attendance area to Twality. These boundary changes account for some of the enrollment change at the affected schools.*

Sources: Oregon Department of Education; TTSD

ENROLLMENT FORECASTS

Potential Residential Development

The previous enrollment forecast report, published in December 2011, included an objective approach to district-wide capacity made possible through the use of parcel-based residential capacity data used in Metro's regional forecast allocation. At that time, the forecast had not been prepared, but the capacity databases indicated that there was capacity within the TTSD for almost 4,000 housing units on vacant residential land. About 6,500 additional units could be built on land that is currently developed or partially developed. [4]

On November 29, 2012, the Metro Council adopted the distribution of their regional household and employment growth forecast to Traffic Analysis Zones (TAZs). We approximated the TTSD boundary using TAZs, allocating Metro's forecast to the District. This allocation shows growth of more than 7,000 households between the 2010 base year and the 2025 forecast increment, an average annual growth rate of 1.3 percent, which is consistent with our population forecast.

In the December 2010 report we included an analysis of potential residential development in the West Bull Mountain area. Using planned densities and land uses from Washington County's West Bull Mountain Concept Plan (WBMCP), we estimated that the TTSD portion of the concept plan area could include from 2,391 to 3,295 homes at build out, generating 736 to 1,017 TTSD K-12 students. Since those estimates were prepared, the City of Tigard has annexed 200 acres of the plan area and has initiated an 18 to 24 month process to prepare a community plan for part of the area that was included in the WBMCP.

The River Terrace Community Plan, with completion anticipated in Summer 2014 will "put into place a means to implement the vision of the concept plan through zoning, development code regulations and other measures that will make urban development possible. The process will also include updates to utility, parks and transportation master plans, including financial

[4] The underlying data was provided by Metro, but household forecasts in the current study and capacity analysis in the December 2011 study were unofficial estimates prepared by the Portland State University Population Research Center.

strategies necessary to fund and maintain required infrastructure improvements."[5] Staff from TTSD will be included in the planning process, and the plan calls for public involvement at every step. Future PRC demographic studies for the TTSD will refine the potential student generation estimates and development timeline based on the plan details and future residential demand.

District-wide Long-range Forecast Methodology

To ensure that enrollment forecasts are consistent with the dynamics of likely population growth within the District, we combine the grade progression enrollment model with a demographic cohort-component model used to forecast population for the District by age and sex. The components of population change are births, deaths, and migration. Using age-specific fertility rates, age-sex specific mortality rates, age-sex specific migration rates, estimates of recent net migration levels, and forecasts of future migration levels, each component is applied to the base year population in a manner that simulates the actual dynamics of population change.

The 2000 and 2010 Census results were used as a baseline for the population forecasts. By "surviving" the 2000 population and 2000s births (estimating the population in each age group that would survive to the year 2010) and comparing the "survived" population to the actual 2010 population by age group, we were able to estimate the overall level of net migration between 2000 and 2010 as well as net migration by gender and age cohort. The net migration data was used to develop initial net migration rates, which were used as a baseline for rates used to forecast net migration for the 2010 to 2030 period.

We estimated the number of births to women residing within the District each year from 1990 to 2010, using data from the Oregon Department of Human Services, Center for Health Statistics. Detailed information including the age of mothers is used to calculate fertility rates by age group for both 2000 and 2010.

State and national long term trends indicate declining fertility rates for women under 30 and increasing rates for women 30 and over, but fertility rates in 2010 were unusually low due to the poor economy. Birth totals fell more than eight percent in the U.S. and Oregon between 2007

[5] River Terrace Community Plan Briefing, November 20, 2012 Tigard City Council workshop.

and 2011.[6] The Pew Research Center's analysis of multiple economic and demographic data sources confirms the close correlation between the economic downturn and the nation's fertility downturn.[7] They report that 2011 birth rates are the lowest ever recorded.[8] Because of the current unusually low rates, we increased rates slightly by 2015 for all age groups.

The total fertility rate (TFR) is an estimate of the number of children that would be born to the average woman during her child-bearing years based on age-specific fertility rates observed at a

Table 12
Estimated and Forecast Births
Tigard-Tualatin School District

Year	Births
2000	1,068
2001	1,082
2002	1,117
2003	1,113
2004	1,155
2005	1,155
2006	1,202
2007	1,202
2008	1,114
2009	1,136
2010	1,019
2011	1,082
2012 (forecast)	1,102
2013 (forecast)	1,121
2014 (forecast)	1,128
2015 (forecast)	1,141
2016 (forecast)	1,153
2017 (forecast)	1,165

Source: 2000-2011 birth data from Oregon Center for Health Statistics allocated to TTSD boundary by PSU-PRC. 2012-2017 forecasts, PSU-PRC.

[6] "Births: Preliminary Data for 2011." National Vital Statistics Report, Volume 61, Number 05, National Center for Health Statistics; *Oregon Vital Statistics Annual Report 2011 Volume 1*, Oregon Health Authority, Center for Health Statistics.

[7] "In a Down Economy, Fewer Births." Pew Research Center, Pew Social & Demographic Trends, October 2011.

[8] "U.S. Birth Rate Falls to a Record Low; Decline Is Greatest Among Immigrants." Pew Research Center, Pew Social & Demographic Trends, November 2012.

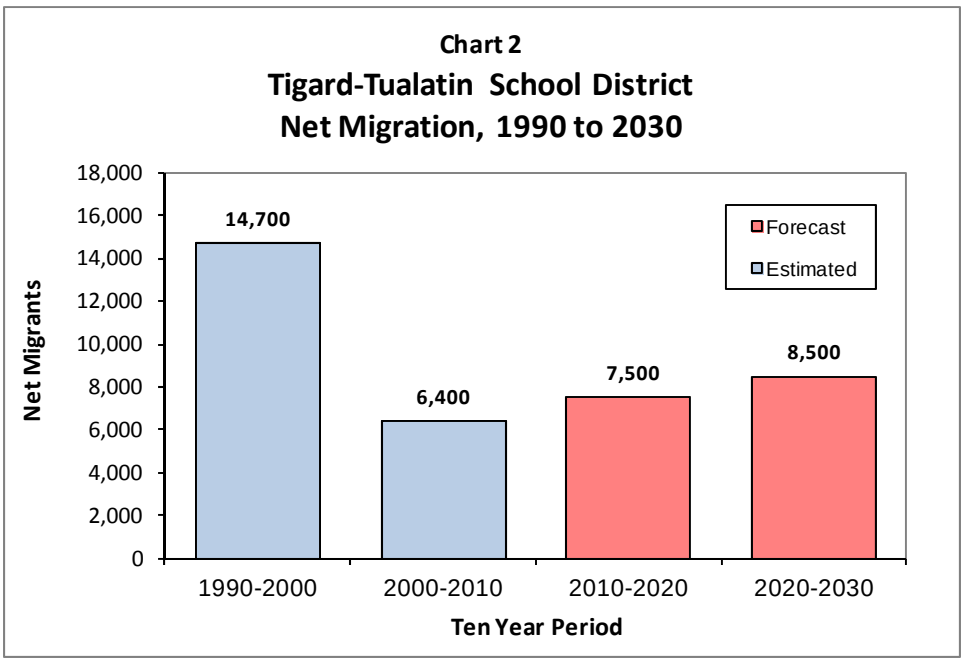
given time. The estimated TFR for the District fell from 2.02 in 2000 to 1.79 in 2010, and rebounds to 1.98 by 2015. Table 12 shows historic births estimated from 2000 to 2011 as well as forecasts from 2012 until 2017, the period that will have an impact on the enrollment forecasts presented in this study.

Historic school enrollment is linked to the population forecast in two ways. First, the kindergarten and first grade enrollments at the time of the most recent census (the 2009-10 school year) are compared to the population at the appropriate ages counted in the census. The "capture rate," or ratio of enrollment to population, is an estimate of the share of area children who are enrolled in TTSD schools. Assumptions for capture rates based on census data are used to bring new kindergarten and first grade students into the District's enrollment. If there is evidence that capture rates have changed since the time of the census, they may be adjusted in the forecast.

The other way that historic population and enrollment are linked is through migration. Annual changes in school enrollment by cohort closely follow trends in the net migration of children in the District's population. Once the students are in first grade, a set of baseline grade progression rates (GPRs) are used to move students from one grade to the next. Grade progression rates are the ratio of enrollment in an individual grade to enrollment in the previous grade the previous year. Baseline rates, usually 1.00 for elementary grades, represent a scenario under which there is no change due to migration. Enrollment change beyond the baseline is added (or subtracted, if appropriate) at each grade level depending on the migration levels of the overall population by single years of age.

Population Forecast

The District added about 9,000 fewer residents in the 2000s than in the 1990s. Most of the difference was due to a lower level of positive net migration (more people moving in than moving out). Natural increase (births minus deaths) has also contributed less to population growth since 2000 due to an aging population and lower fertility. Although slow growth has persisted in the first two years of this decade, growth due to net migration is forecast to be slightly higher in the 2010 to 2020 period than in the 2000 to 2010 period. Chart 2 shows the 1990 to 2010 estimates and 2010 to 2030 forecasts of TTSD population growth attributable to net migration.



The district-wide population forecast by age group is presented in Table 13. The forecast for 2020 population in the TTSD is 94,464, an increase of 11,007 persons from the 2010 Census (1.2 percent average annual growth). School-age population (5 to 17) is forecast to increase at a slower rate than overall population. The 1,227 person growth in school-age population amounts to eight percent in the 20 year period, or 0.8 percent annually. By 2020, the fastest growing age groups are the "baby boom" generation that will be in its 60s and 70s. Population age 55 and older in the District is forecast to account for more than two thirds of the District's growth between 2010 and 2020.

Table 13
Population by Age Group
Tigard-Tualatin School District, 2000 to 2030

	2000 Census	2010 Census	2020 Forecast	2030 Forecast	2010 to 2030 Change	
					Number	Percent
Under Age 5	5,128	5,744	6,044	6,494	750	*13%*
Age 5 to 9	5,209	5,606	6,016	6,537	931	*17%*
Age 10 to 14	5,016	5,646	6,277	6,595	949	*17%*
Age 15 to 17	2,959	3,393	3,579	3,946	553	*16%*
Age 18 to 19	1,642	1,769	1,790	1,914	145	*8%*
Age 20 to 24	4,470	4,665	5,405	6,008	1,343	*29%*
Age 25 to 29	5,547	5,803	6,369	6,625	822	*14%*
Age 30 to 34	5,633	6,075	6,121	7,091	1,016	*17%*
Age 35 to 39	6,102	6,116	6,363	6,983	867	*14%*
Age 40 to 44	6,284	6,022	6,449	6,501	479	*8%*
Age 45 to 49	5,829	6,201	6,191	6,442	241	*4%*
Age 50 to 54	4,609	6,249	5,972	6,398	149	*2%*
Age 55 to 59	3,175	5,696	6,105	6,093	397	*7%*
Age 60 to 64	2,206	4,493	6,068	5,793	1,300	*29%*
Age 65 to 69	1,733	2,960	5,319	5,692	2,732	*92%*
Age 70 to 74	1,797	2,127	4,223	5,618	3,491	*164%*
Age 75 to 79	1,862	1,642	2,715	4,790	3,148	*192%*
Age 80 to 84	1,592	1,564	1,798	3,496	1,932	*124%*
Age 85 and over	1,371	1,686	1,660	2,170	484	*29%*
Total Population	**72,164**	**83,457**	**94,464**	**105,186**	**21,729**	***23%***
Total age 5 to 17	13,184	14,645	15,872	17,078	2,433	*15%*
share age 5 to 17	*18.3%*	*17.5%*	*16.8%*	*16.2%*		

		2000-2010	2010-2020	2020-2030
Population Change		**11,293**	**11,007**	**10,722**
Percent		*16%*	*13%*	*11%*
Average Annual		*1.5%*	*1.2%*	*1.1%*

Source: U.S. Census Bureau, 2000, and 2010 Censuses; data aggregated to TTSD boundary by Portland State University Population Research Center. PSU-PRC Forecasts, 2020 and 2030.

District-wide Enrollment Forecast

Chart 3 compares the historic and forecast number of births in the District with the historic and forecast number of TTSD kindergarten students. Births correspond to kindergarten cohorts (September to August). Although many children move into and out of the District between birth and age five, and not all District residents attend TTSD kindergartens, the trend in kindergarten enrollment has generally followed the trend in the birth cohort. However, the gap between births and kindergarten enrollment is now wider than it was 10 years ago, as a consequence of lower net migration, declining capture rates, or some combination of the two factors. Kindergarten and first grade capture rates are shown in Table 13. The higher rates for first grade reflect the fact that additional residents enter TTSD schools after completing their kindergarten year in private schools.

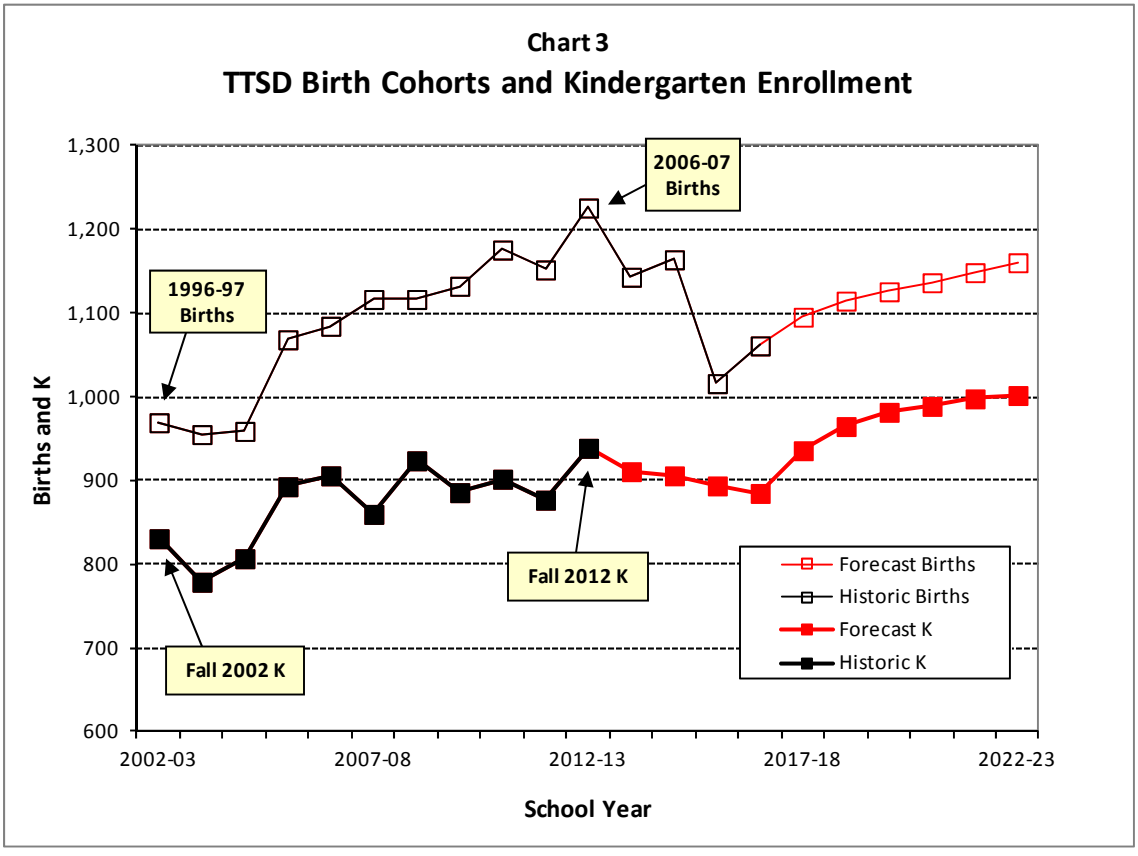


Table 14

Estimated and Forecast Capture Rates*

Tigard-Tualatin School District

School Year	Kindergarten	Grade 1
1989-1990 (census)	0.83	0.88
1999-2000 (census)	0.79	0.84
2009-2010 (census)	0.80	0.88
2019-2020 (forecast)	0.80	0.81

**The ratio of enrollment in District schools to total population in the District.*

Before the last four years when enrollment losses have occurred, The District's growth was fueled by migration; there were consistently more households moving in than out. This migration contributed to the long term growth in District births and subsequent kindergarten enrollments, as was shown in Chart 3. Table 15 illustrates how the TTSD gained students due to migration at nearly every grade level. During the six years between 2002-03 and 2008-09,

Table 15

Grade Progression Rates[1]

Tigard-Tualatin S.D. History and Forecast

Grade Transition	6 Year Average: 2002-03 to 2008-09	4 Year Average: 2008-09 to 2012-13	Baseline (without the influence of migration)	Forecast Average: 2012-13 to 2022-23
K-1	1.11	1.04	--[2]	1.03
1-2	1.01	0.99	1.00	1.01
2-3	1.00	0.99	0.99	1.01
3-4	1.01	0.99	1.00	1.01
4-5	1.02	1.01	1.01	1.02
5-6	1.01	0.98	0.99	1.00
6-7	1.02	1.00	1.00	1.01
7-8	1.01	1.00	1.00	1.02
8-9	1.05	1.04	1.04	1.05
9-10	0.99	0.99	0.99	0.99
10-11	0.97	0.98	0.98	0.98
11-12	0.95	1.01	1.01	1.01

1. Ratio of enrollment in an individual grade to enrollment in the previous grade the previous year.

2. The enrollment forecast model uses capture rates for first grade; K-1 baseline GPRs are not used.

average GPRs for each grade from 2nd to 8th were generally 1.01 or 1.02, indicating growing enrollments due to migration at each grade level. For the most recent four years, from 2008-09 to 2012-13, there has been a small net loss at most grade levels attributable to migration of school-age children. The forecast includes enrollment growth due to migration due to anticipated economic recovery and resumed demand for new housing within the District.

Slow growth in K-12 enrollment is forecast between 2012-13 and 2016-17, with annual growth rates ranging between 0.3 and 0.6 percent. Although growth is expected due to migration, the decline in birth rates between 2007 and 2011 will result in smaller kindergarten classes through at least 2016-17. After 2016, more enrollment growth is forecast due to expected housing growth including infill in the District's more established areas such as Metzger, Central Tigard, and the Tigard Triangle, and planned development in the River Terrace area. Annual enrollment growth rates range from 0.8 percent to 1.0 percent after 2016-17. Over the 10 year forecast period, K-12 enrollment is forecast to increase by 921 students (seven percent).

Currently, the largest classes in elementary grades are kindergarten and first grade. Although incoming kindergarten classes are forecast to be smaller than the current class, K-5 enrollments grow in the near term due to in-migration. However, secondary enrollments are likely to grow very little or not at all, as current relatively small elementary classes advance into middle school. In the first five years of the forecast, between 2012-13 and 2017-18, K-5th grades add 229 students (four percent), 6th-8th grades add 42 students (one percent) and 9th-12th grades add 97 students. For the 10 year period ending in 2022-23, K-5th grade enrollments grow by 538 students (10 percent). Middle school enrollments fluctuate somewhat; in the seven years between 2012-13 and 2019-20, 6th-8th grades add 217 students, but their enrollment falls in 2021-22 and 2022-23 due to the smaller birth cohorts of the 2008 to 2011 period. High school enrollment growth of 288 students is forecast for the 10 year period.

Table 16 contains grade level forecasts for the Tigard-Tualatin School District for each year from 2013-14 to 2022-23. The forecasts are also summarized by grade level groups (K-5, 6-8, and 9-12).

Table 16

Tigard-Tualatin School District, Enrollment Forecasts, 2013-14 to 2022-23

	Actual	Forecast									
Grade	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
K	939	911	906	894	885	936	965	982	989	998	1,002
1	935	972	950	943	920	911	964	994	1,004	1,015	1,021
2	917	944	988	965	958	935	926	980	1,002	1,014	1,023
3	888	917	950	993	970	964	941	932	977	1,001	1,011
4	928	896	931	964	1,007	985	979	955	939	987	1,009
5	926	945	918	953	986	1,031	1,009	1,003	972	959	1,005
6	975	924	949	921	956	990	1,035	1,013	1,001	973	957
7	960	983	937	961	933	969	1,004	1,049	1,021	1,012	981
8	928	968	997	949	974	946	982	1,018	1,057	1,032	1,020
9	1,011	970	1,016	1,046	996	1,022	993	1,031	1,064	1,107	1,079
10	986	1,004	966	1,012	1,042	992	1,018	989	1,024	1,058	1,100
11	990	967	985	948	993	1,023	974	999	970	1,005	1,038
12	958	1,001	978	996	959	1,005	1,035	985	1,010	981	1,016
Total	**12,341**	**12,402**	**12,471**	**12,545**	**12,579**	**12,709**	**12,825**	**12,930**	**13,030**	**13,142**	**13,262**
Annual change		*61*	*69*	*74*	*34*	*130*	*116*	*105*	*100*	*112*	*120*
		0.5%	*0.6%*	*0.6%*	*0.3%*	*1.0%*	*0.9%*	*0.8%*	*0.8%*	*0.9%*	*0.9%*
K-5	5,533	5,585	5,643	5,712	5,726	5,762	5,784	5,846	5,883	5,974	6,071
6-8	2,863	2,875	2,883	2,831	2,863	2,905	3,021	3,080	3,079	3,017	2,958
9-12	3,945	3,942	3,945	4,002	3,990	4,042	4,020	4,004	4,068	4,151	4,233

	5 Year Change: 2012-13 to 2017-18		**5 Year Change: 2017-18 to 2022-23**		**10 Year Change: 2012-13 to 2022-23**	
	Growth	**Pct.**	**Growth**	**Pct.**	**Growth**	**Pct.**
K-5	229	*4%*	309	*5%*	538	*10%*
6-8	42	*1%*	53	*2%*	95	*3%*
9-12	97	*2%*	191	*5%*	288	*7%*
Total	**368**	***3%***	**553**	***4%***	**921**	***7%***

Population Research Center, Portland State University, December 2012

Individual School Forecasts

Forecasts for individual schools are prepared under a scenario in which current boundaries and grade configurations remain constant. Of course, school districts typically respond to enrollment change in various ways that might alter the status quo, such as attendance area boundary changes, opening new schools, or offering special programs. If new charter or private schools open, enrollment at District-run schools may be affected. However, the individual school forecasts depict what future enrollments might be under current conditions.

The methodology for the individual school forecasts relies on unique sets of GPRs for each school. New kindergarten classes were forecast each year based on recent trends and birth cohorts within elementary attendance areas. Subsequent grades were forecast using GPRs based initially on recent rates and adjusted based on expected levels of housing growth. The final forecasts for individual schools are controlled to match the district-wide forecasts.

We evaluated Metro's residential capacity data for each school attendance area. Among elementary schools, Alberta Rider's attendance area contains the greatest amount of buildable residential land, followed by Durham, Metzger, Woodward, and Deer Creek. These five schools account for about 90 percent of the vacant residential land in the District. Alberta Rider and Woodward also include the TTSD portion of the West Bull Mountain area. Assumptions about future growth in kindergarten enrollment and future GPRs are based on past trends for each school as well as future residential growth potential.

Enrollment at Fowler Middle School remains relatively stable throughout the 10 year period, with the possibility of a growth spurt when the current large kindergarten class reaches 6th grade in 2018-19. Hazelbrook's largest growth occurs next Fall (2013-14) when its current small 8th grade is replaced by a larger incoming 6th grade. Twality is expected to lose enrollment next year, but it experiences the greatest growth among middle schools in the long run, with a 2020-21 enrollment 93 students larger than its 2012-13 total. Tigard High School's enrollment forecast is fairly stable, while Tualatin High School adds nearly 200 students over the 10 year forecast period.

Table 17 presents the enrollment forecasts for each school, grouped by school level (elementary, middle, and high).

Table 17
Enrollment Forecasts for Individual Schools, 2012-13 to 2022-23

School	Actual 2012-13	Forecast 2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Change 2012-13-2022-23
Alberta Rider	601	628	651	663	683	688	682	690	701	720	736	135
Bridgeport	508	511	511	510	519	512	525	532	532	538	545	37
Byrom	568	542	538	551	530	543	542	542	543	546	554	-14
C.F. Tigard	583	598	589	603	607	607	601	607	608	613	619	36
Deer Creek	516	533	541	549	549	554	567	576	582	597	612	96
Durham	550	550	552	557	544	555	557	565	572	585	599	49
Metzger	570	577	602	622	631	649	636	640	642	652	664	94
Templeton	596	594	614	609	597	597	604	608	608	612	616	20
Tualatin	617	622	624	640	639	626	631	634	635	636	639	22
Woodward	424	430	421	408	427	431	439	452	460	475	487	63
Elementary Totals	**5,533**	**5,585**	**5,643**	**5,712**	**5,726**	**5,762**	**5,784**	**5,846**	**5,883**	**5,974**	**6,071**	**538**
Fowler M.S.	802	782	791	774	774	774	829	871	881	844	828	26
Hazelbrook M.S.	988	1,047	1,043	994	989	995	1,022	1,020	1,004	1,005	988	0
Twality M.S.	1,049	1,005	999	1,011	1,048	1,084	1,118	1,137	1,142	1,116	1,090	41
Middle School Totals	**2,839**	**2,834**	**2,833**	**2,779**	**2,811**	**2,853**	**2,969**	**3,028**	**3,027**	**2,965**	**2,906**	**67**
Tigard H.S.	1,975	1,963	1,909	1,911	1,883	1,886	1,899	1,874	1,921	1,994	2,037	62
Tualatin H.S.	1,842	1,834	1,879	1,926	1,942	1,991	1,956	1,965	1,982	1,992	2,031	189
Durham Center (7^{th}-12^{th})	67	67	67	67	67	67	67	67	67	67	67	0
Tig.-Tual. Online (6^{th} - 12^{th})	85	119	140	150	150	150	150	150	150	150	150	65
High School Totals	**3,969**	**3,983**	**3,995**	**4,054**	**4,042**	**4,094**	**4,072**	**4,056**	**4,120**	**4,203**	**4,285**	**316**
District Totals	**12,341**	**12,402**	**12,471**	**12,545**	**12,579**	**12,709**	**12,825**	**12,930**	**13,030**	**13,142**	**13,262**	**921**

Population Research Center, Portland State University, December 2012

Table 18

Facility Capacity and Enrollment, 2012-13 and 2022-23

School	2012-13						2022-23	
	Capacity Excluding portables		Capacity Including Portables					
	With Some Half Day K	With All Full Day K	With Some Half Day K	With All Full Day K	2012-13 Enroll-ment[1]	Available Capacity (excluding portables)[2]	2022-23 Forecast Enroll-ment[1]	Available Capacity (excluding portables)[3]
Alberta Rider	624	598	n/a	n/a	601	23	736	-138
Bridgeport	572	546	624	598	508	64	545	1
Byrom	650	624	754	728	568	82	554	70
C.F. Tigard	624	598	n/a	n/a	583	41	619	-21
Deer Creek	624	598	n/a	n/a	516	108	612	-14
Durham	598	572	n/a	n/a	550	48	599	-27
Metzger	546	520	650	624	570	-24	664	-144
Templeton	598	572	650	624	596	2	616	-44
Tualatin	598	572	n/a	n/a	617	-19	639	-67
Woodward	624	598	728	702	424	200	487	111
Elementary Totals	**6,058**	**5,798**	**6,474**	**6,214**	**5,533**	**525**	**6,071**	**-273**
Fowler M.S.	983	983	n/a	n/a	802	181	828	155
Hazelbrook M.S.	1,040	1,040	n/a	n/a	988	52	988	52
Twality M.S.	942	942	1,084	1,084	1,049	-107	1,090	-148
Middle School Totals	**2,965**	**2,965**	**3,107**	**3,107**	**2,839**	**126**	**2,906**	**59**
Tigard H.S.	1,776	1,776	1,898	1,898	1,975	-199	2,037	-261
Tualatin H.S.	1,888	1,888	n/a	n/a	1,842	46	2,031	-143
High School Totals	**3,664**	**3,664**	**1,898**	**1,898**	**3,817**	**-153**	**4,068**	**-404**
Durham Center	105	105	n/a	n/a	67	38	67	38
District Totals[1]	**12,792**	**12,532**	**11,584**	**11,324**	**12,256**	**536**	**13,112**	**-580**

1. Does not include Tigard-Tualatin Online Academy.

2. 2012-13 Capacity without portables, and with some half-day kindergarten classes minus October 1, 2012 enrollment.

3. 2012-13 Capacity without portables, with all full day kindergarten classes (to be implemented 2015-16) minus 2022-23 forecast enrollment.

Sources: TTSD, 2009 Facilities and Capacity Assessment updated to reflect addition of portables at Metzger; PSU Population Research Center enrollment forecasts.

The capacity figures in Table 18 are from the TTSD's November 2009 Facilities and Capacity Assessment, adjusted for the addition of two portables at Metzger. They are compared with both the base year (2012-13) and end year (2022-23) of the enrollment forecast. The forecast indicates that there will be district-wide capacity shortfalls at the elementary and high school levels.

FORECAST ERROR AND UNCERTAINTY

In general, forecast error varies according to the size of the population being forecast and the length of the forecast horizon. The smaller the population and the longer the forecast period, the larger the error is likely to be. In particular, the school level forecasts depend on assumptions about the distribution of housing and population growth in small areas within the District over a 10 year period, so the error is likely greater than the District-wide forecast error. The forecasts should be used as only one of many tools in the planning process.

Due to the nature of forecasting, there is no way to estimate a confidence interval as one might for data collected from a survey. The best way to measure potential forecast error is to compare actual enrollments with previous forecasts that were conducted using similar data and methodologies. In Table 18 on the next page, actual TTSD enrollment by grade level in Fall 2012 is compared with the 2012-13 forecasts that were prepared one year earlier, as well as those prepared two and three years earlier. Similarly, Table 19 compares enrollment forecasts for individual schools. As a measure of average error for grade levels and for individual school enrollments, the mean absolute percent error (MAPE) is included in the tables.

Forecasts prepared in 2009 did not anticipate that the housing downturn and poor economy would persist as long as it did, and those forecasts were significantly higher than actual enrollments. Those forecasts also did not incorporate the expansion of MITCH. If MITCH had been taken into account, the errors would have been smaller for 3rd, 6th, 7th, and 8th grades, and for the K-12 total. Forecasts prepared in 2010 and 2011 were much more accurate, reflecting the new reality of slow growth or slight decline.

The K-12 forecast prepared in 2010 was 57 students (0.5 percent) higher than actual enrollment and the one year forecast prepared in 2011 was 28 students (0.2 percent) higher than actual K-12 enrollment in Fall 2012. In both the one and two year forecasts for 2012-13, the grade level MAPE was 1.9 percent

Table 19
Fall 2012 Enrollment Compared to Previous Forecasts
By Grade Level

		One year forecast[1]			Two year forecast[2]			Three year forecast[3,4]		
Grade	**Actual**	**Fcst.**	**Diff.**	**Error**	**Fcst.**	**Diff.**	**Error**	**Fcst.**	**Diff.**	**Error**
K	939	897	-42	*-4.5%*	937	-2	*-0.2%*	946	7	*0.7%*
1	935	908	-27	*-2.9%*	955	20	*2.1%*	993	58	*6.2%*
2	917	946	29	*3.2%*	932	15	*1.6%*	991	74	*8.1%*
3[4]	888	880	-8	*-0.9%*	902	14	*1.6%*	967	79	*8.9%*
4	928	939	11	*1.2%*	955	27	*2.9%*	995	67	*7.2%*
5	926	933	7	*0.8%*	915	-11	*-1.2%*	948	22	*2.4%*
6[4]	975	1,006	31	*3.2%*	997	22	*2.3%*	1,030	55	*5.6%*
7[4]	960	981	21	*2.2%*	982	22	*2.3%*	993	33	*3.4%*
8[4]	928	914	-14	*-1.5%*	910	-18	*-1.9%*	944	16	*1.7%*
9	1,011	1,015	4	*0.4%*	993	-18	*-1.8%*	1,018	7	*0.7%*
10	986	1,008	22	*2.2%*	970	-16	*-1.6%*	1,009	23	*2.3%*
11	990	994	4	*0.4%*	1,012	22	*2.2%*	986	-4	*-0.4%*
12	958	946	-12	*-1.3%*	936	-22	*-2.3%*	881	-77	*-8.0%*
US[5]	0	2	2		2	2		5	5	
Total	**12,341**	**12,369**	**28**	***0.2%***	**12,398**	**57**	***0.5%***	**12,706**	**365**	***3.0%***
MAPE[6]				***1.9%***			***1.9%***			***4.3%***

1. Forecast for 2011-12 by PSU-PRC, baseline 2011-12 enrollment. December 2011.

2. Forecast for 2011-12 by PSU-PRC, baseline 2010-11 enrollment. December 2010.

3. Forecast for 2011-12 by PSU-PRC, baseline 2009-10 enrollment. December 2009.

4. The three year forecast did not include the impact of MITCH Charter School adding middle grades and an additional first grade class in 2010-11. This expansion likely resulted in 12-14 fewer 6th-8th grade students per grade and at least 14 fewer third grade students attending District-run schools in 2012-13.

5. Ungraded secondary enrollment

6. Mean absolute percent error for individual grades K-12.

Table 20

Fall 2012 Enrollment Compared to Previous Forecasts by Individual School

		One year forecast[1]			Two year forecast[2]			Three year forecast[3]		
School	**Actual**	**Fcst.**	**Diff.**	**Error**	**Fcst.**	**Diff.**	**Error**	**Fcst.**	**Diff.**	**Error**
Alberta Rider	601	558	-43	*-7.2%*	576	-25	*-4.2%*	617	16	*2.7%*
Bridgeport	508	542	34	*6.7%*	554	46	*9.1%*	565	57	*11.2%*
Byrom	568	570	2	*0.4%*	590	22	*3.9%*	604	36	*6.3%*
C. F. Tigard	583	577	-6	*-1.0%*	531	-52	*-8.9%*	579	-4	*-0.7%*
Deer Creek	516	515	-1	*-0.2%*	538	22	*4.3%*	559	43	*8.3%*
Durham	550	555	5	*0.9%*	564	14	*2.5%*	592	42	*7.6%*
Metzger	570	580	10	*1.8%*	561	-9	*-1.6%*	612	42	*7.4%*
Templeton	596	585	-11	*-1.8%*	643	47	*7.9%*	621	25	*4.2%*
Tualatin Elem.	617	602	-15	*-2.4%*	595	-22	*-3.6%*	600	-17	*-2.8%*
Woodward	424	419	-5	*-1.2%*	444	20	*4.7%*	491	67	*15.8%*
Elementaries	**5,533**	**5,503**	**-30**	***-0.5%***	**5,596**	**63**	***1.1%***	**5,840**	**307**	***5.5%***
Fowler	802	839	37	*4.6%*	807	5	*0.6%*	859	57	*7.1%*
Hazelbrook	988	971	-17	*-1.7%*	969	-19	*-1.9%*	979	-9	*-0.9%*
Twality	1,049	1,085	36	*3.4%*	1,108	59	*5.6%*	1,125	76	*7.2%*
Middle Schools[4]	**2,839**	**2,895**	**56**	***2.0%***	**2,884**	**45**	***1.6%***	**2,963**	**124**	***4.4%***
Tigard HS	1,975	2,010	35	*1.8%*	1,982	7	*0.4%*	1,962	-13	*-0.7%*
Tualatin HS	1,842	1,897	55	*3.0%*	1,879	37	*2.0%*	1,877	35	*1.9%*
Durham Center	67	64	-3	*-4.5%*	57	-10	*-14.9%*	64	-3	*-4.5%*
Tigard-Tualatin C	85	N/A			N/A			N/A		
High Schools	**3,969**	**3,971**	**2**	***0.1%***	**3,918**	**-51**	***-1.3%***	**3,903**	**-66**	***-1.7%***
District	**12,341**	**12,369**	**28**	***0.2%***	**12,398**	**57**	***0.5%***	**12,706**	**365**	***3.0%***
MAPE[5]				***2.5%***			***4.1%***			***5.7%***

1. Forecast for 2011-12 by PSU-PRC, baseline 2011-12 enrollment. December 2011.

2. Forecast for 2011-12 by PSU-PRC, baseline 20010-11 enrollment. December 2010.

3. Forecast for 2011-12 by PSU-PRC, baseline 2009-10 enrollment. December 2009.

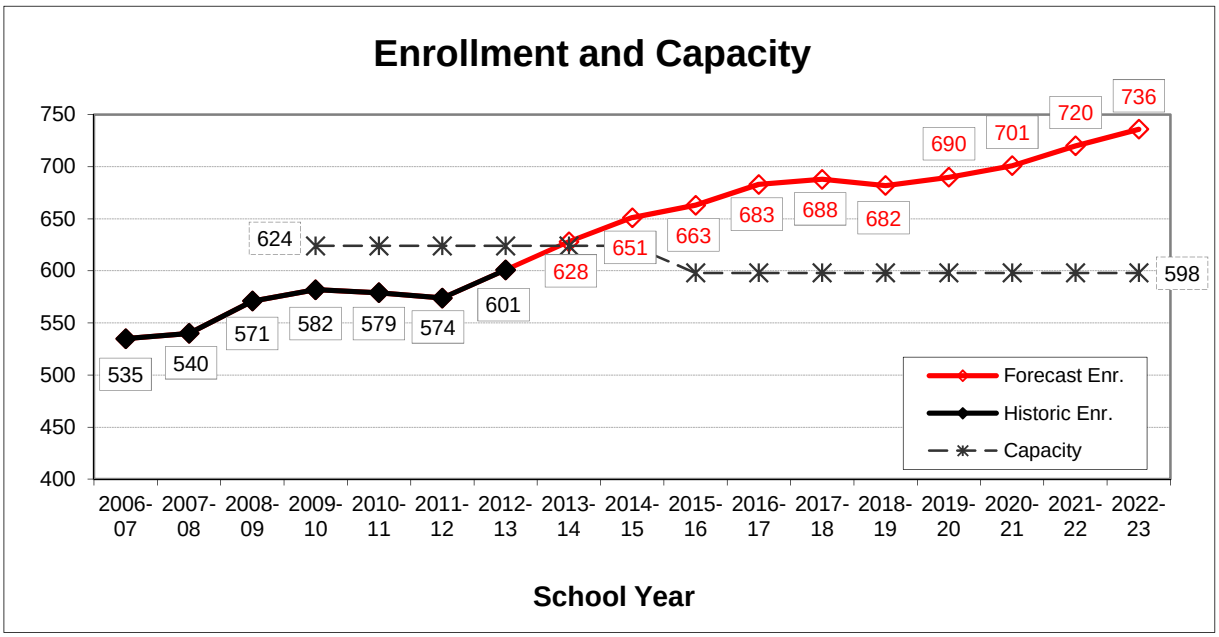
4. The three year forecasts did not include the impact of MITCH Charter School adding middle grades. This expansion likely resulted in 35-45 fewer students attending District-run middle schools.

5. Mean absolute percent error for individual schools.

APPENDIX A

ENROLLMENT AND CAPACITY PROFILES FOR INDIVIDUAL SCHOOLS

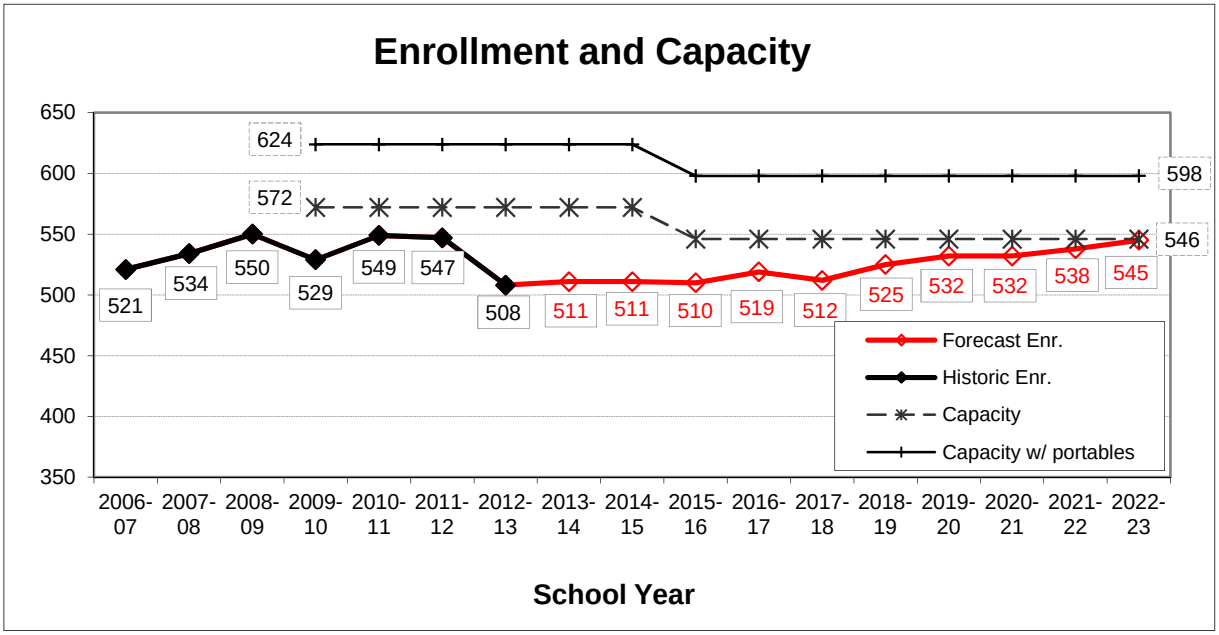
Alberta Rider Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	540	601	688	736
Change		61	87	48

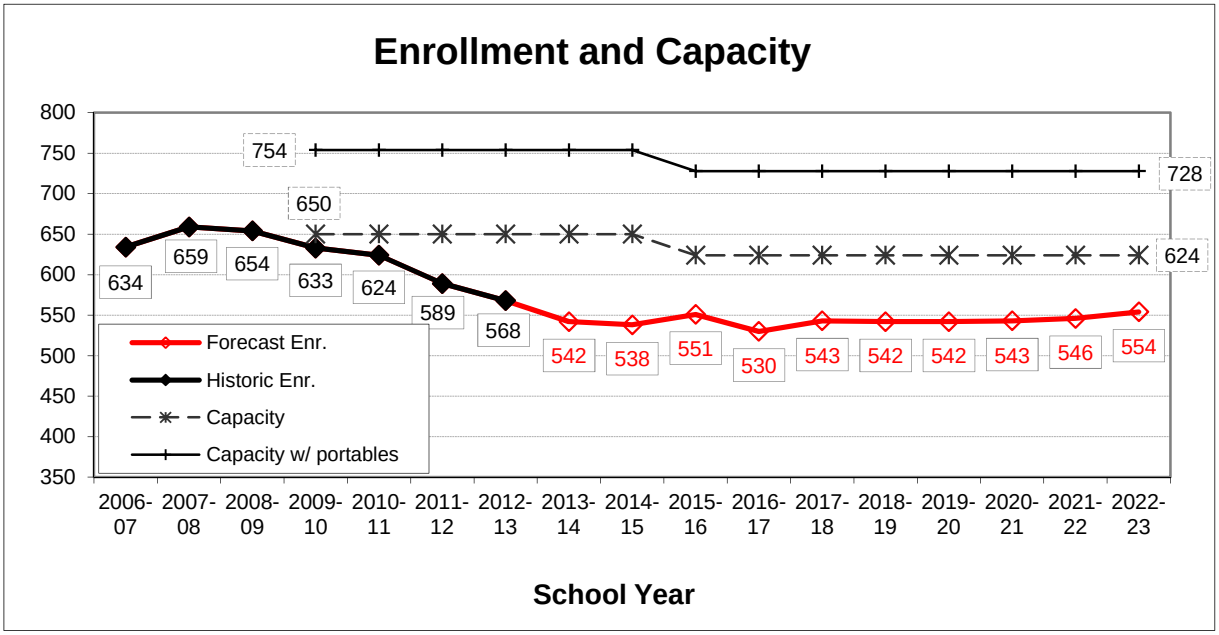
Bridgeport Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	534	508	512	545
Change		-26	4	33

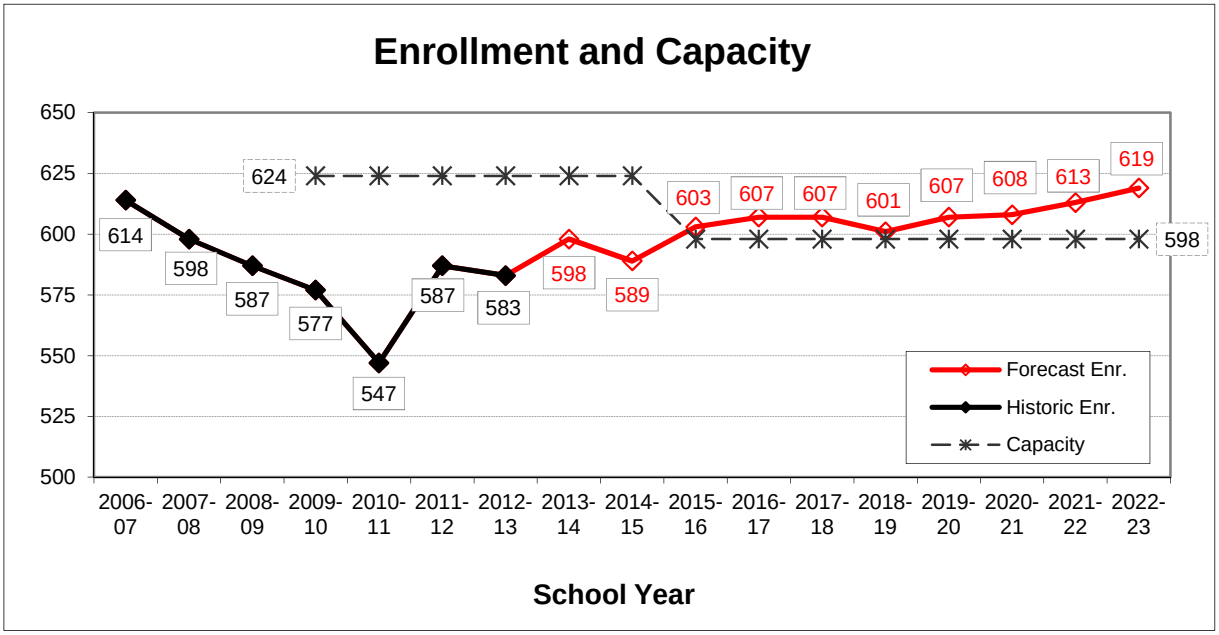
Edward Byrom Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	659	568	543	554
Change		-91	-25	11

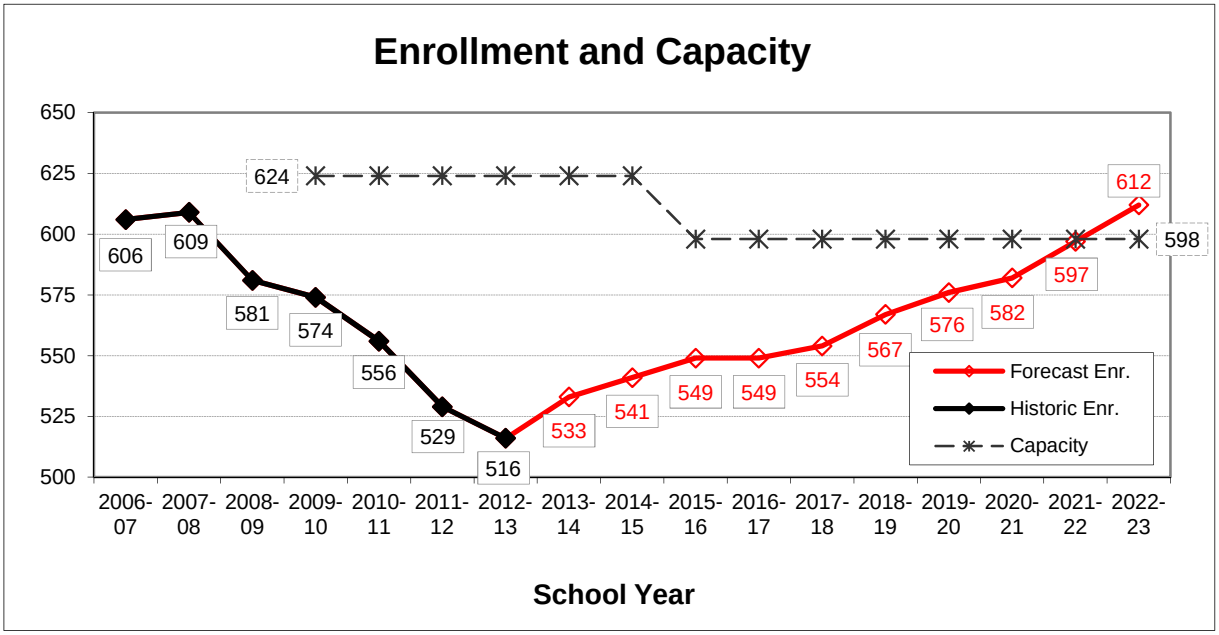
Charles F. Tigard Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	598	583	607	619
Change		-15	24	12

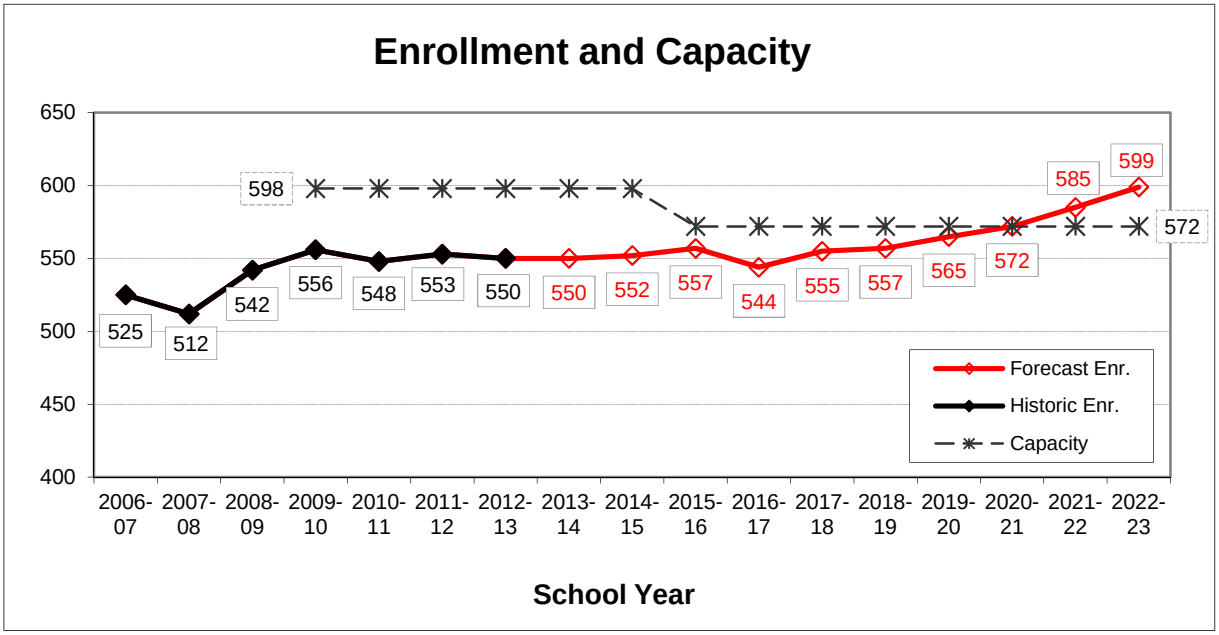
Deer Creek Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	609	516	554	612
Change		-93	38	58

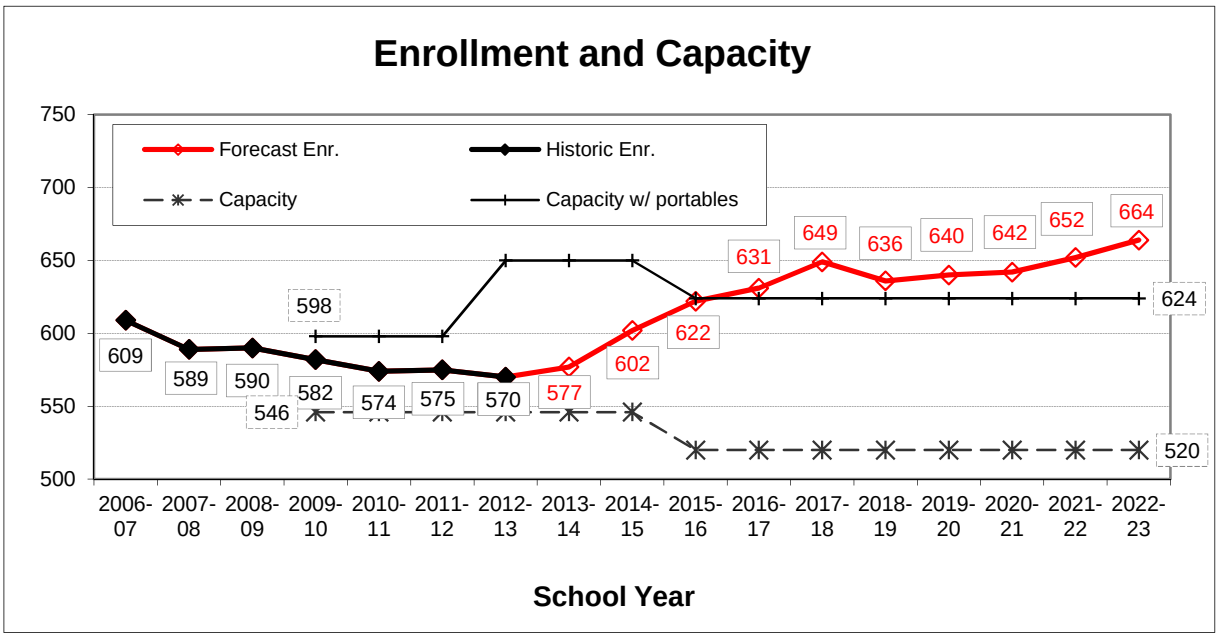
Durham Elementary School



Notes: In 2006 a phased-in boundary change began that assigned a portion of the attendance area from Metzger to Durham. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	512	550	555	599
Change		38	5	44

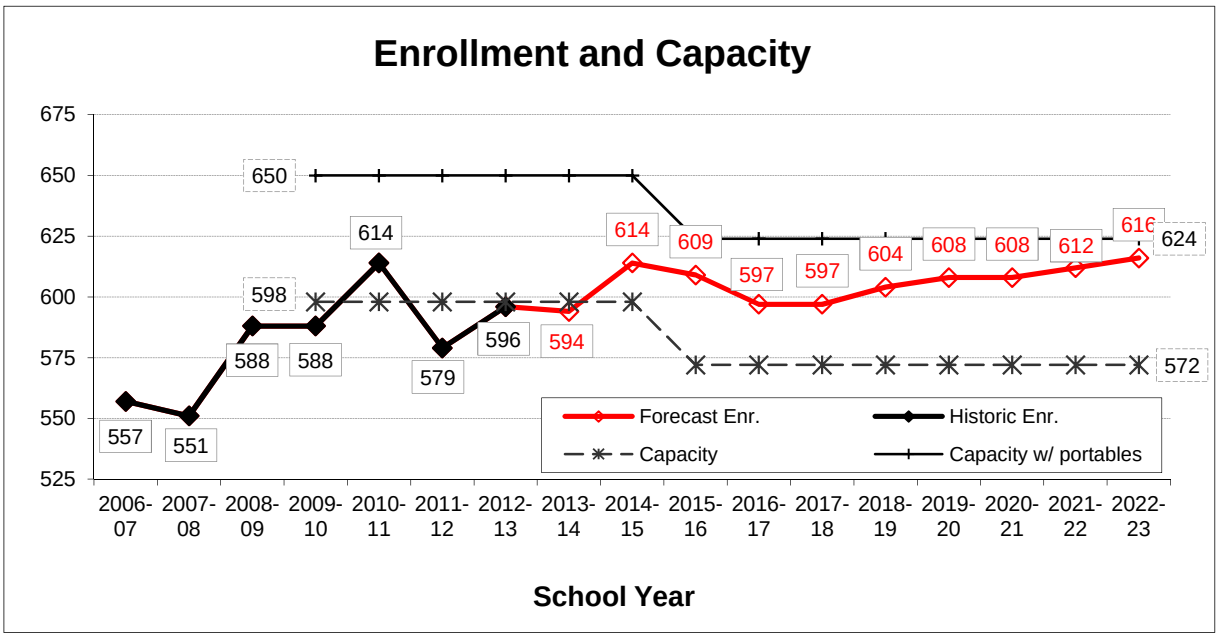
Metzger Elementary School



Notes: In 2006 a phased-in boundary change began that assigns a portion of the former attendance area to Durham. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	589	570	649	664
Change		-19	79	15

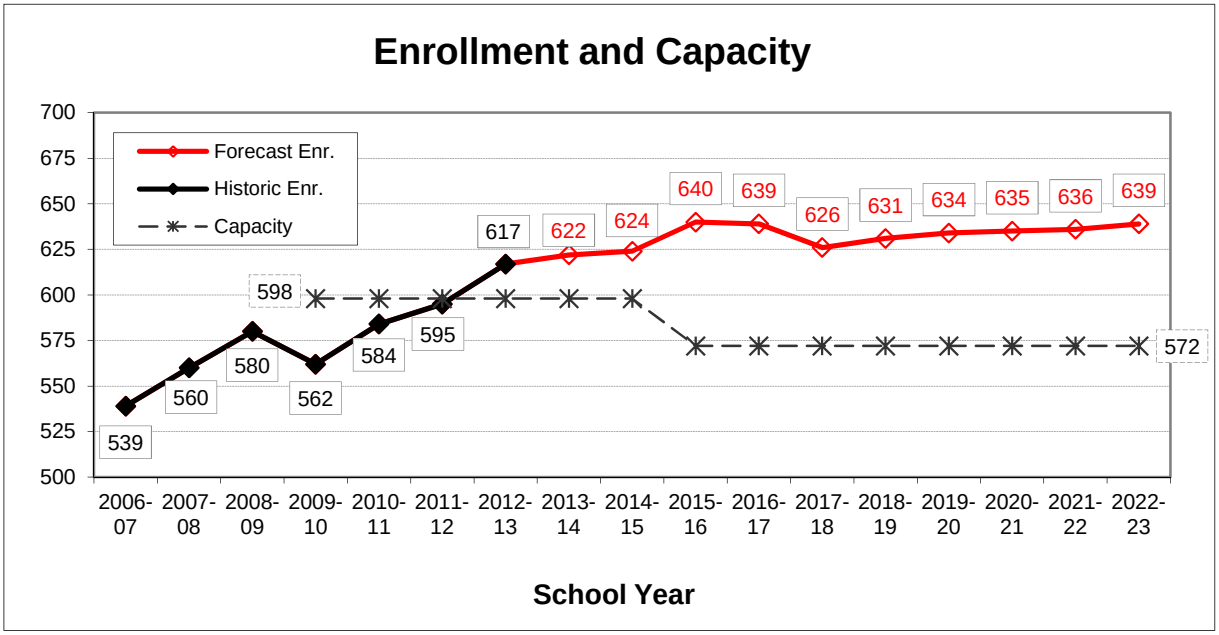
James Templeton Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	551	596	597	616
Change		45	1	19

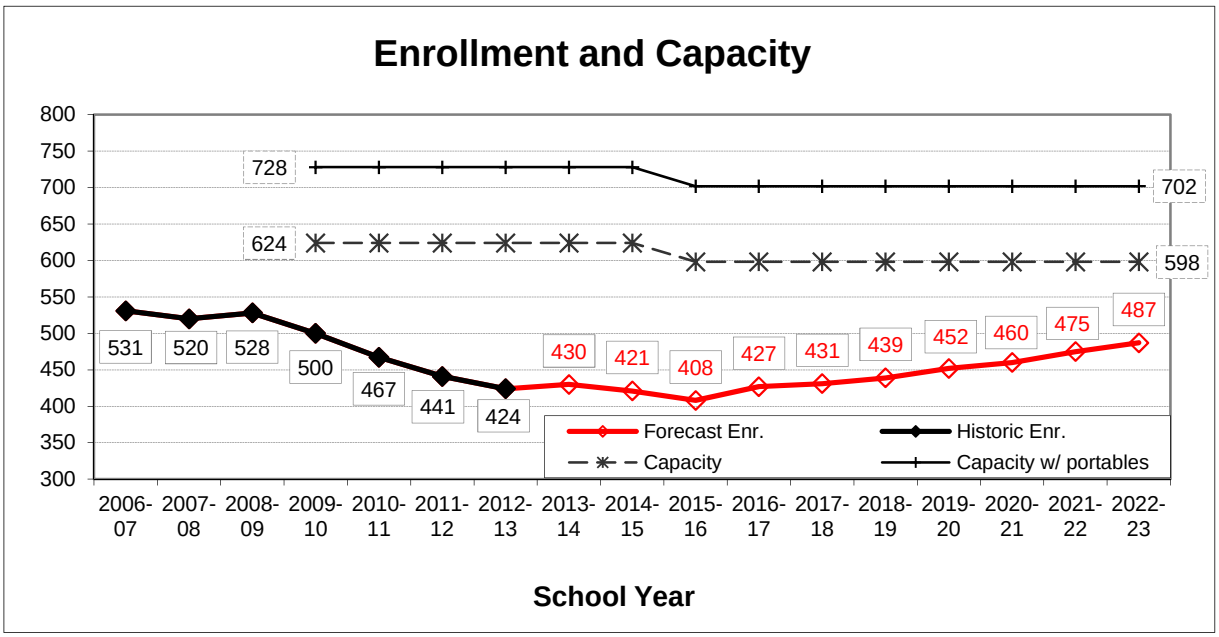
Tualatin Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	560	617	626	639
Change		57	9	13

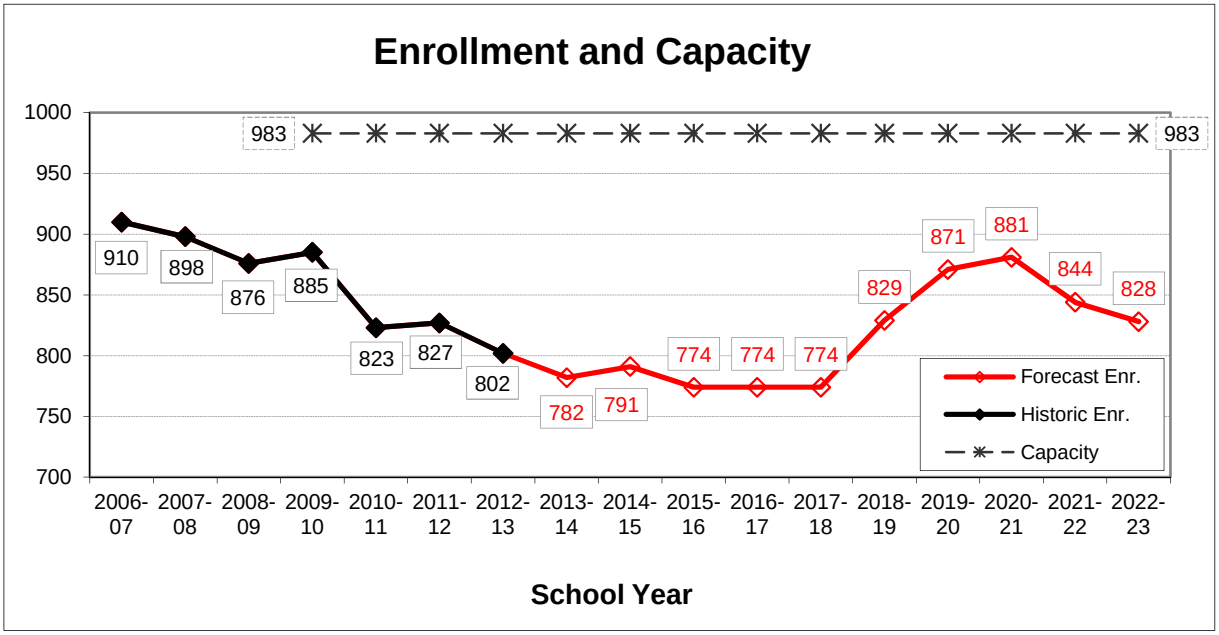
Mary Woodward Elementary School



Note: Capacity prior to 2015-16 at all elementary schools includes some half day kindergarten classes. Beginning in 2015-16 all kindergarten classes are expected to be full day, thereby reducing capacity.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	520	424	431	487
Change		-96	7	56

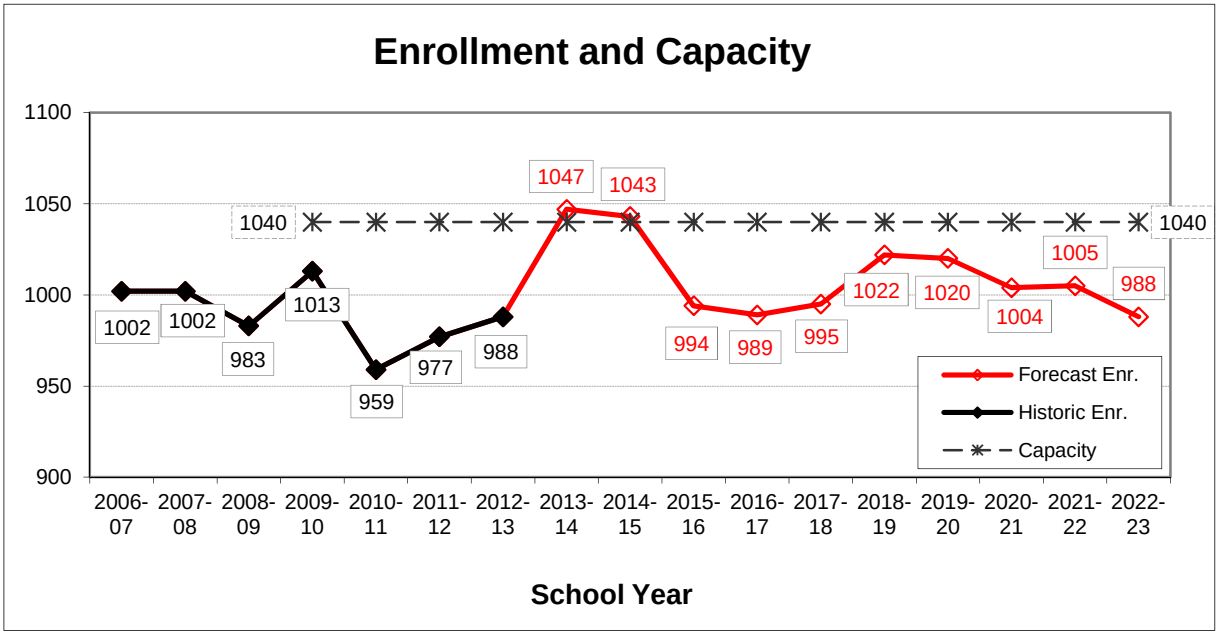
Fowler Middle School



Note: In 2006 a phased-in boundary change began that assigns a portion of the attendance area to Twality.

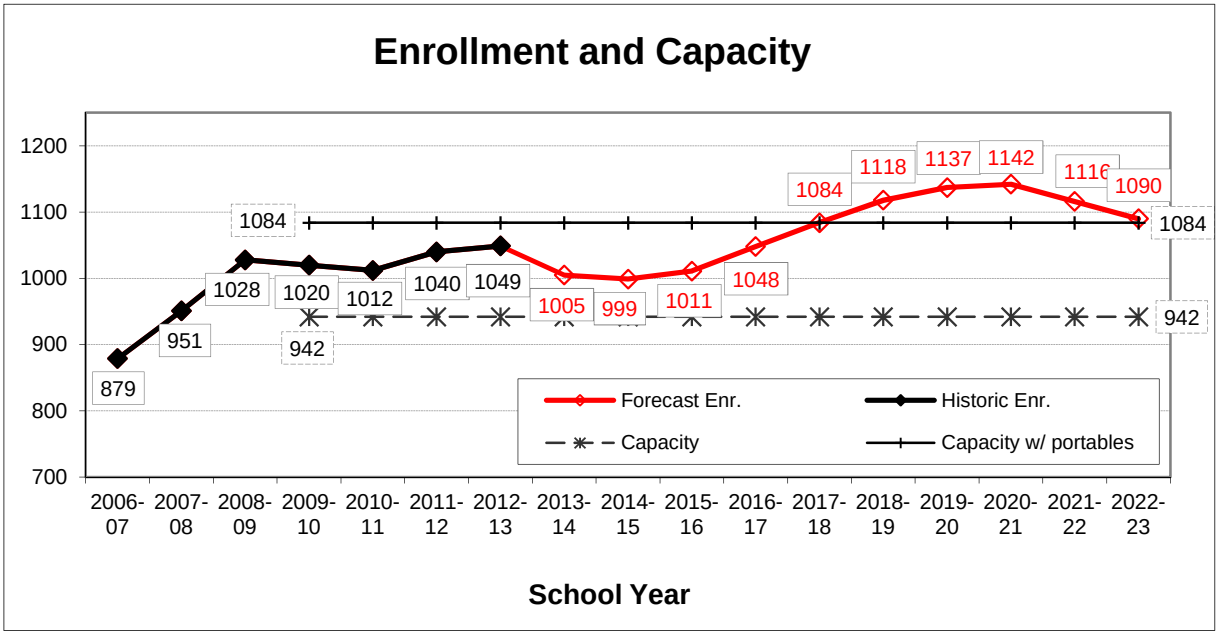
Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	898	802	774	828
Change		-96	-28	54

Hazelbrook Middle School



Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	1002	988	995	988
Change		-14	7	-7

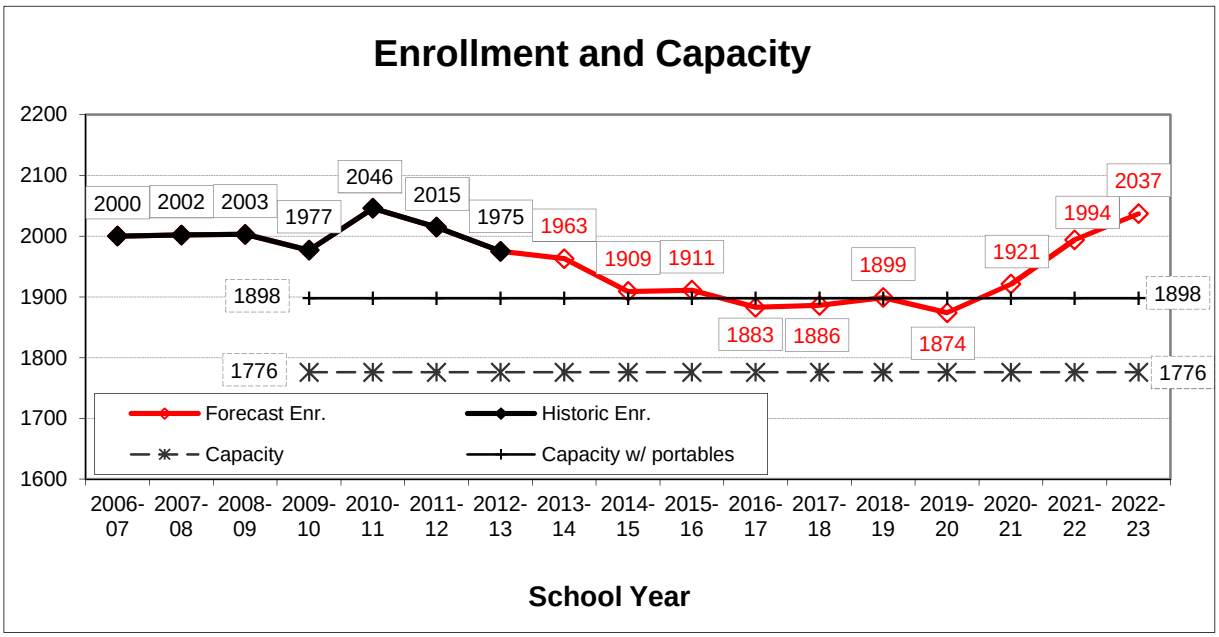
Twality Middle School



In 2006 a phased-in boundary change began that assigns a portion of Fowler's former attendance area to Twality.

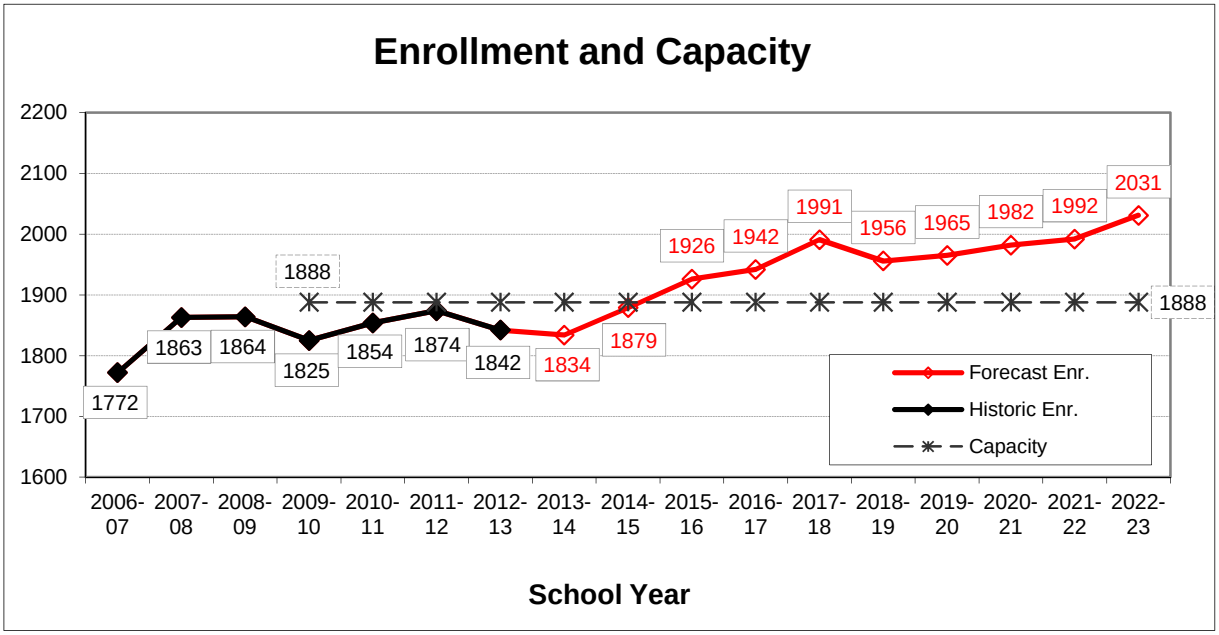
Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	951	1049	1084	1090
Change		98	35	6

Tigard High School



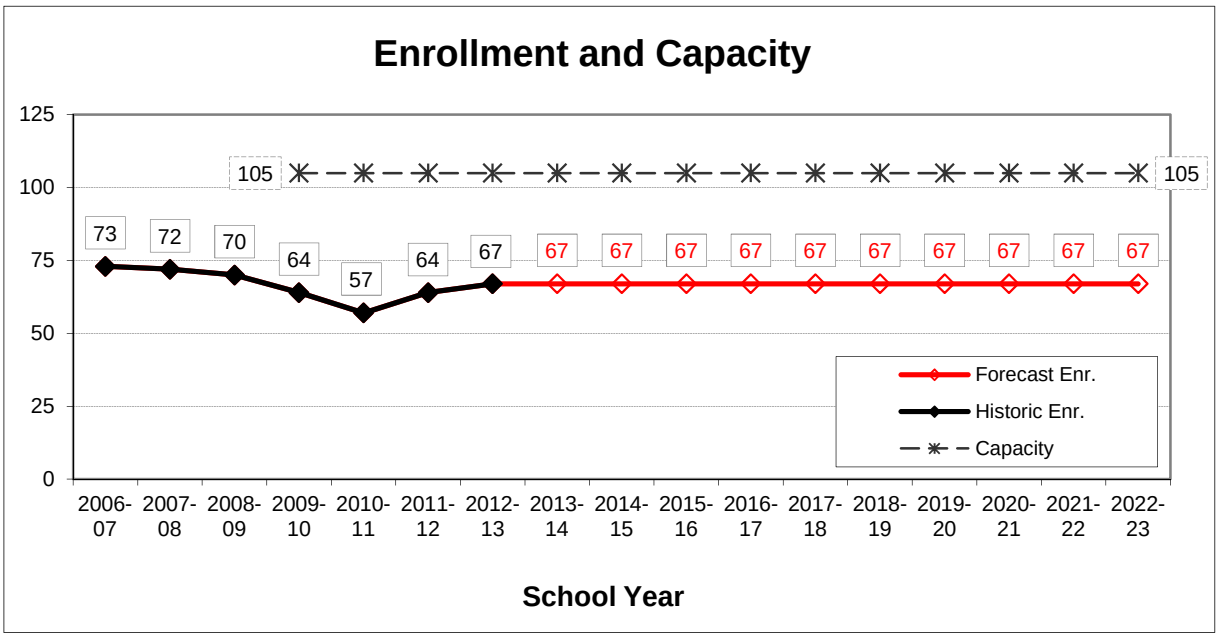
Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	2002	1975	1886	2037
Change		-27	-89	151

Tualatin High School



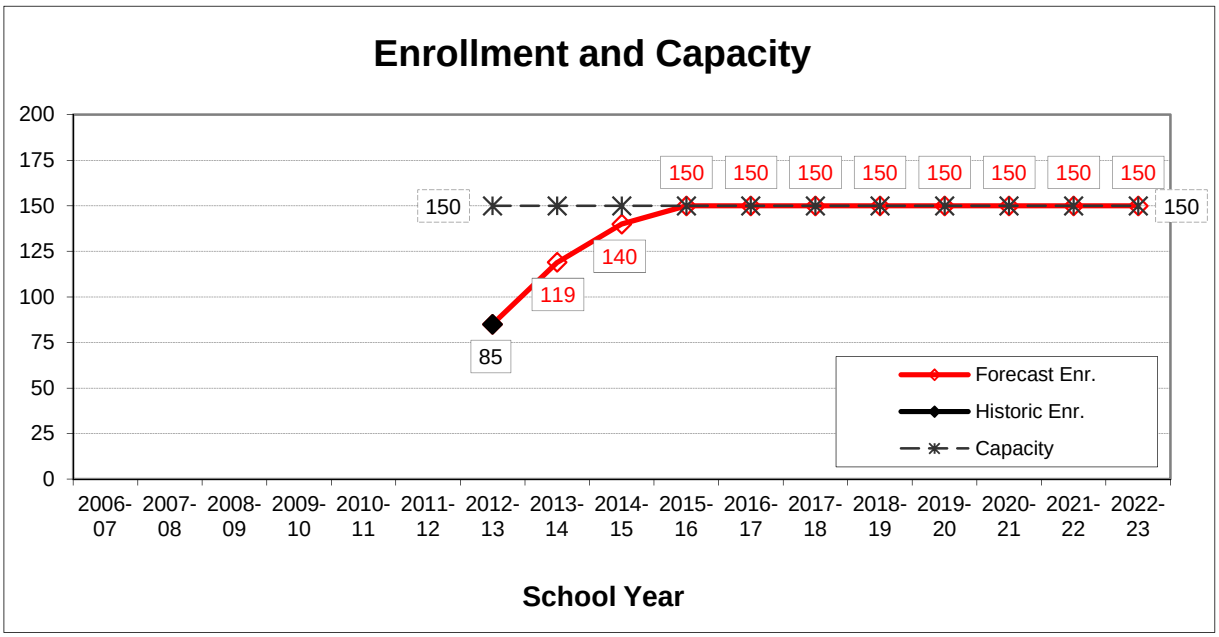
Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	1863	1842	1991	2031
Change		-21	149	40

Durham Center



Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	72	67	67	67
Change		-5	0	0

Tigard-Tualatin Online Academy



Note: Opened in 2012.

Enrollment History and Forecast				
	History		Forecast	
	2007-08	2012-13	2017-18	2022-23
Total enrollment	0	85	150	150
Change		85	65	0